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Classical Greek and classical Chinese warfare: a comparative analysis

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THESIS

CLASSICAL GREEK AND CLASSICAL CHINESE WARFARE: A COMPARATIVE ANALYSIS

by

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June 2000

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CLASSICAL GREEK AND CLASSICAL CHINESE WARFARE: A COMPARATIVE ANALYSIS

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This study is a comparative analysis of the warfare traditions of classical China and Classical Greece. The first part of this study is designed to provide a framework for understanding how certain characteristics of a society's military tradition arise, and in particular, why certain aspects of the military traditions of classical China and classical Greece are dissimilar while other aspects are similar.

Specifically, chapter two demonstrates that the particular socio-political situation of a given state sets constraints upon the way that state can mobilize, organize, and employ a military force, and shows that intensive militant competition places a market incentive on a state to innovate and to select the most efficient defensive action options from the feasible set of possibilities. The third chapter suggests that the major differences in warfare character between classical Greece and China stem from the robust differences in the socio-political situations of the two societies.

The methodological approach for the second part, chapters four and five, is simple comparative analysis. Chapter four examines organizational differences of classical Greek and Chinese warfare—specifically differences related to armaments, force structures, and command and control elements. The subsequent chapter five examines the main differences relating to classical Greek and Chinese operational concepts.

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I. INTRODUCTION

A. PURPOSE

The theme that classical Greek culture, politics, society, even warfare are *sui generis* (Gabriel, Culture 84), especially in comparison with what has been called the "Oriental Way" (Hamilton), is recurrent in the ancient literature of the Greeks as well as in modern works. Even though it is not an exact correlation between Greece and China per se, it is interesting to see how robust qualitative character distinctions were made in the early Greek literature between the Greeks and their proximate oriental neighbors, the Persians. For instance, the Persian Queen in Æschylus' play "Persians" is told that the "Greeks fight as free men to defend what is precious to them." She is astonished to learn that they have no master, and that "no man calls Greeks slaves or vassals" (Hamilton, 36). In an apocryphal Plutarchian story about the great Solon of Athens engaging Croesus, the Lydian monarch in conversation, Croesus triumphantly demonstrates to Solon his great wealth and the great treasures of his kingdom. He asks Solon who the happiest man in the world must be. "Tellus the Athenian," replies Solon. Angry, Croesus demands to know why. "He had been an honest man," says Solon, "had had good children, a competent estate, and died bravely in battle for his country" (Starr, 269). As Edith Hamilton rightly points out, these and other examples demonstrate that "the idea of freedom had been born;" the idea of the "liberty of the individual" was a sentiment that permeated early Greek society (36). And while the cultural gap between Greece and Persia was robust enough, we can only imagine the gap between Greece and China being greater still.

The rise of the individual in ancient Greece is an event surrounded by traditional practices of political control and domination of the individual in the neighboring Orient. Yet, despite the repression of the common man by the monarchical system dominant in China, there are some important similarities between ancient China and ancient Greece. Such similarities may give us cause to question why some of the cultural progenies born of these societies were so different. Consider the similarities: Both societies were composed of multiple state-like entities, which were all very similar in character to their neighbors. Both societies were marked by intensive interstate competition, usually manifesting itself in battle. Because of this competition, which spurred needs for active measures to ensure state survival, all of the successful states within both societies ardently devoted attention, intellection, and resources to military matters. Both societies were based in agriculture and made strides in economic development during this period. Perhaps most interestingly, both societies had just emerged from Mythos-based cultures, where explanatory mechanisms for the way of the universe were steeped in mythology, occult, and religion, into a new world dominated by rational thought and philosophical and scientific rigor of which we are the intellectual heirs.

This study is a comparative analysis of the warfare traditions of classical China and Classical Greece, specifically focusing on the so called "Archaic" and early "Classic" periods Greece (about 750B.C.-450B.C), and the period in China encompassing the mid to late "Spring and Autumn" period and early "Warring States" period (about 700B.C.-400B.C.). (The exact reasons for this particular selection of time periods will be

explained in a later chapter.[1]) The study will be divided into four chapters (not including introduction and conclusion). Chapters II and III present a model for understanding how fundamental differences in warfare traditions of different cultures might arise. Chapter II presents a general theory for such an explanation, while chapter three demonstrates how that theory can be implemented for the specific cases of classical China and Greece. Chapters IV and V consist of the actual comparison of the warfare traditions of classical Greece and China. Chapter IV will examine organizational differences and similarities, particularly relating to armaments, force structures, and command and control. Chapter V will examine differences and similarities of operational concepts prevalent in the two ancient societies.

B. SPECIFIC INTRODUCTION: CHAPTERS II AND III

1. Approach

If a comparison between the classical war traditions of ancient China and ancient Greece is to be of any value, we must be able to give at least a provisional account explaining why certain differences and similarities between the traditions exist. Part one of this study is designed to provide a framework for understanding how certain characteristics of a society's military tradition arise, and in particular, why certain aspects of the military traditions of classical China and classical Greece are dissimilar while other aspects are similar. To accomplish this, we need to construct a comparative experiment where we can control the testing conditions to some extent and gain explanatory insight regarding fluctuations in the dependent variable. I identify the dependent variable to be

[1] Note that for the remainder of this study, my use of the word "classical" with regard to China or Greece refers specifically to these time periods.

the "military traditions" of classical China and classical Greece. Perhaps a better term to capture the essence of this variable is "the character of warfare" observed in these two classical societies. This includes the manner in which war is fought and how the military is generally organized. Essentially it means "how" the military fights.

I will clarify this definition below, but it is important to note here that this comparative experiment will look at fluctuations in this dependent variable across classical China and classical Greece as whole societies, rather than looking at fluctuations within these societies. It will be demonstrated below that the two societies developed military traditions during the classical period by engaging nearby states, within the larger societal structure, in battle. The differences in military character between neighboring states of the same classical society were minimal compared to the dramatic differences in military character between the classical societies of Greece and China as wholes. Thus, the military tradition or "character" of classical China for example, includes the military aspects of all the monarchical states participating throughout the classical period. Some generalizing assumptions will need to be made to support this generalized comparison, but, because of the large fluctuations in the dependent variable, such assumptions will not hurt the experiment.

What independent variables can be identified to explain the apparent differences in warfare character? I identify two: A certain aspect of the socio-political situation of a given state termed the "locus of political power" and the intensive competition between similarly constructed autonomous states.[2] Chapter II will define these variables and

[2] The role of these particular variables in the general theory is largely the result of the heuristic work of Gordon McCormick.

discuss exactly how they function to produce a given state's warfare character, and chapter three will employ these variables for the specific case of classical Greece and China. The model will demonstrate that the particular socio-political situation of a given state sets constraints on how that state can mobilize, organize, and employ a military force. The constraints form a "feasible set" of possible defensive action options. It also suggests that intensive militant competition places a market incentive on the state to select the most efficient defensive action option from the feasible set. This model will serve as the foundation for the comparison of warfare traditions given in part two.

It will be instructive here to give a brief survey of different methodological approaches that have been used in the past in similar efforts to demonstrate how the warfare character of a given state arises. This will be important since my theory will employ variations on some of the key concepts and mechanisms found in these earlier techniques.

2. Previous Efforts to Understand the Character of Warfare

a. Warfare as an Expression of Culture

When gauging the apparent differences in warfare character between these two classical societies, one might be inclined to suggest that the dramatic cultural differences evidenced between these classical societies is enough to explain the warfare character differences. This argument identifies cultural differences are the proximate cause of differences in warfare character. In other words, it suggests that war is a

cultural expression.[3] There are two main problems (at least) with this type of argument, one general problem and one specific to the experiment at hand.

The general problem with this *war-as-a-cultural-expression* argument is the "causal complexity" problem. In a recent article, Stephen Peter Rosen notes that the "question of whether military behavior and thought might vary across cultural boundaries has occurred intermittently to American academics and policymakers" for a variety of different reasons in past years, particularly due to the occurrence of strategic contact with societies that are culturally distinct from American society. These early efforts, he suggests, began with the "observation of 'obvious' differences in culture and 'obvious' differences in military behavior, and jumped to the conclusion that the first was the source of the second." This is problematic because of the variety of factors involved in the notion of *cultural differences*.

Without suggesting what elements might be involved in this slippery notion of "culture," Rosen proffers correctly that it is difficult to "untangle [cultural factors] from the many other factors" which play a role in shaping the character of hostile behavior (5-9). This dual inability to specify the pertinent factors involved in the elusive notion of *culture* and to untangle those factors from causal elements not necessarily under the *culture* umbrella is an example of a methodological failure to manage the problem of causal complexity. Humans generally have a holistic understanding of causation

[3] Note that this argument is different from arguments explored by the study of "Anthropology of Conflict," which seek explanations for "why war is fought." The "cultural expression" argument is different. It simply suggests that "how war is fought" is related somehow to culture. The "Anthropology of Conflict" arguments relate to questions about the origins or warfare, while the "cultural expression" arguments relate questions about how war is conducted when it has already been instantiated as an institution.

involving the complex interplay of many variables that, often, cannot be individually extracted from the context in which they interact. This "black box" understanding of causation may be why the use of such slippery umbrella terms such as *culture* is so appealing. However, this usage is inadequate from a methodological standpoint. What can we do? The solution lies in extracting key variables from the causal stew and making appropriate simplifying assumptions whereby confounding variables may be downplayed or "partialed." Conditions can thereby be controlled (e.g., Ragin and George).

This analysis will employ such mechanisms in attempting to overcome the general problem of causal complexity. What about the specific problem of the *cultural expression* argument? This specific problem relates to the comparative experiment at hand because of a tendency to regard the classical forms of warfare in ancient China and Greece as cultural entities existing as part of the total culture of each classical society. Lumping the warfare characters of each of these societies within a larger cultural framework serves only to muddle any understanding of how such warfare characters really arise. This tendency seems to be amplified by the fact that the two societies in question represent the classical roots of two deep and far-reaching cultural traditions, extending even to this day. Much of our Western culture, especially philosophical and governmental patterns, can be traced to the ancient Greeks. The case is similar with Eastern culture and the classical Chinese. Yet, this should not dissuade us from seeking rigorous explanations for the particular character of warfare apart from the sphere of culture.

An example of one who occasionally seems to become enmeshed in this "culture trap" is Victor Davis Hanson. While at times he seems to support the thesis that

"the Greeks saw their infantry fighting ultimately as economical and practical," he often hints that their warfare was one of the "many awful rituals in their culture" of which all citizens were initiates (Western 220-221). This ambiguity between the conception of Greek phalanx battle as a cultural "ritual" born of the Homeric ideal of the heroic warrior and the conception of warfare character as necessarily economical and efficient is a problematic trend that must be addressed. This trend in Hanson's work will be discussed again in the third chapter of this study. Relating this Hansonian-type ambiguity to causal complexity, historian Chester Starr points out the need to examine all aspects of Greek culture and heritage for purposes of analysis, suggesting that "during the throbbing flow of great ages many changes run concurrently, so closely interlocked that one can hardly define which is cause and which is effect" (205).

b. Strategic Culture

Realizing that the "cultural expression" argument leads not to adequate independent variables but to methodological hobgoblins, political scientists advanced the notion of strategic culture to ameliorate the problem of understanding military behavior by peoples from different cultural traditions. Growing out of early notions of "political culture," the concept of strategic culture was first used to explain different attitudes towards nuclear war held by the Soviets and the Americans (Rosen, 11-13). Yitzhak Klein defines strategic culture as "the set of beliefs held by strategic decisionmakers regarding the political object of war and the most effective means of achieving it." Such belief systems, he says, arise out of the "strategy-maker's need to act purposively" despite the inherent uncertainty of war. A priori, subjective judgments are necessary, he argues, if one is to take action in an uncertain environment (3-11). How do these

subjective judgments arise? Klein is more interested in how they work than how they arise, but the general theory surrounding strategic culture suggests that "cultural heredity" plays a role in shaping the way decision makers view the feasible set of strategic options, and driving them to consider certain options rather than others (Booth; Rosen, 12-13).

This notion of culture as a unit of heredity is not new. In 1976 ethologist Richard Dawkins promoted the idea that cultural traits and information can be spread though a population like the alleles of a gene. These "memes," the cultural analogs to genes, are units of cultural replication which take such forms as ideas, traditions, theories, and, like genes, are subject to the processes of mutation and selection (Dawkins). The idea that cultural transmissions affect the subjective perspectives of decision makers is interesting and may be useful in understanding the strategic decision-making processes of other nations if a rigorous theory of strategic culture can be developed. Yet, as Rosen points out, the problems with theories of strategic culture arise with their application. How can we gain "constant, reliable access to what's inside people's minds" (11-14)? Since such theories have yet to demonstrate how such thought-stuff can be accessed and analyzed, they fall victim to a causal complexity trap similar to that discussed above—they place too much weight on holistic causal variables such as subjective thought which really encompass a multitude of complex interacting factors.

The general model for understanding how warfare traditions arise presented in chapter two, and implemented with respect to Greece and China in chapter three, will aim to avoid the problems associated with these other mechanisms for understanding warfare character.

B. SPECIFIC INTRODUCTION: CHAPTERS IV AND V

Chapters II and III demonstrate that the particular socio-political situation of a given state sets constraints upon the way that state can mobilize, organize, and employ a military force. They also show that intensive militant competition places a market incentive on a state to innovate and to select the most efficient defensive action options from the feasible set of possibilities. The third chapter suggests that the major differences in warfare character between classical China and Greece stem from the robust differences in the socio-political situations of the two societies. Based on this model and this understanding of the reason behind the military character differences, part two begins the actual direct comparison of the two warfare traditions.

The methodological approach is simple comparative analysis. Chapter IV looks at organizational differences—specifically differences related to armaments, force structures, and command and control. The subsequent Chapter V examines the main differences relating to operational concepts.

The design of this two-part comparison is based on the notion that in an ideal warfare system, concepts of operations are the sole factors that determine the way a military mobilizes, organizes, and employs against a given enemy. Of course, an "ideal-type" warfare system assumes unlimited options, and thus, zero socio-political constraints—the feasible set is infinite. This of course is not what happens in real systems. Yet, even in real warfare systems, concepts of operations still play some role in determining how military force is applied. At the least, operational concepts help determine which options from the feasible set of possible options are most efficient.

Consider, for example, the generalized notion of "phalanx warfare." This term references a non-existent ideal-type warfare system. This notion is useful for focusing on general themes of phalanx warfare, common to most particular instantiations of phalanx warfare. Yet, this ideal-type mechanism, useful for investigating generalities, leads us astray at times. It would have us believe that the phalanx form existed primarily because it was based on some pre-determined concept of operations. On the contrary, the phalanx form was not a product of human design, but a product of socio-political necessity. The notion of "Chinese warfare" also refers to an ideal type of warfare, which, for the most part, never really existed. Again, the ideal-type mechanism is a tool, a means of inquiring about general themes of Chinese warfare, abstracted from the actual cases and summed together to form an idea about what Chinese warfare was like. Considering the ideal-type system, which is really only a false interpolation of the real system that it represents, reminds us that concepts of operations did play some role, however small compared with the socio-political situation, in determining warfare character.

The sources used for this comparison of warfare character given in part two consist of primary and secondary sources. Much secondary work has been done on the topics of classical Greek warfare. Less has been done on classical Chinese warfare. No work making a direct and thorough comparison of the two yet exists. I used primary sources for both Greek and Chinese warfare whenever appropriate (all translations). The accompanying bibliography is comprehensive and includes several useful sources not directly cited in this essay.

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II. A MODEL OF FLUCTUATIONS IN WARFARE CHARACTER

While the main thrust of this study lies in comparing the very different warfare traditions of ancient China and ancient Greece, some provisional account of how such differences arise must be given. This chapter will attempt to provide such an explanatory mechanism, providing the bedrock upon which the comparative analysis of warfare traditions will rest.

The question of why the warfare traditions of ancient China and ancient Greece are so different is interesting for two reasons. First, these two traditions were foundational—they gave birth to two diametrically opposed modern day warfare traditions, which may be loosely termed "Western and Easter ways of war." Whether or not these two modern day traditions are truly antithetical is open for discussion. But, there is undoubtedly some kernel of modern Western warfare character that is diametrically opposed to a corresponding kernel of Eastern warfare character. This disparity is rooted in and is the natural outgrowth of the disparity of the corresponding warfare characters seen in the two ancient societies. Second, the opposing warfare traditions in question arose contemporaneously out of societies that were culturally different, yet shared many surprising similarities. Both societies were composed of multiple state-like entities, which were all very similar in character to their neighbors. Both societies were marked by intensive interstate competition, usually manifesting itself in battle. Because of this competition, which spurred needs for active measures to ensure state survival, all of the successful states within both societies ardently devoted attention,

intellection, and resources to military matters. Both societies were based in agriculture and made strides in economic development during this period. Perhaps most interestingly, both societies had just emerged from Mythos-based cultures, where explanatory mechanisms for the way of the universe were steeped in mythology, occult, and religion, into a new world dominated by rational thought and philosophical and scientific rigor of which we are the intellectual heirs. This mélange of similarities must give us cause to question why the warfare traditions exemplified by the two ancient societies were so different, and how such differences arose. The importance that these two foundational periods of warfare played in shaping modern warfare character adds additional importance to these questions.[4]

A. INTRODUCTION TO THE MODEL

The differences in the "warfare character" of the two ancient societies can be attributed to the interplay of two independent variables functioning within each society: (1) a particular aspect of the socio-political system in place within the small states of each society which will be termed the "locus of political power," and (2) the intensive militant competition between the small states within each society. I will demonstrate that the value of the first independent variable, the "locus of political power," is different for the two ancient societies. The "locus of political power" is simply a point on a one-dimensional continuum where one end of the continuum represents political power completely in the hands of the state, and the opposite end represents political power completely in the hands of society. I will show that the "loci" for the states within

[4] The model presented in this chapter was developed by Gordon McCormick.

ancient China rested far to the state side, while the "loci" of the city-states within ancient Greece rested far to the society side.

The city-states of ancient Greece generally employed identical socio-political systems. The same is true of the small states within ancient China. Thus, we can think of the "locus of political power" of ancient China and of ancient Greece as representing an average of all the "loci of political power" of all the small states within China and within Greece respectively. The position of the "locus of political power," evaluated at this societal level, served to constrain, in different ways, the possible defensive action measures that the small states within each society could take. It will be argued that since ancient Greece's locus of political power rested with society, their ability to mobilize, organize, and employ resources was heavily constrained, while ancient China's ability to do the same was not nearly as constrained because their locus of political power rested with the state.

While the independent variable of "locus of political power" defines the feasible set of possible defensive action options by constraining resource mobilization, organization, and employment, the second independent variable of constant militant competition between states suggests which defensive action option from the feasible set will be selected and employed. Constant militant competition threatens peril to the state that does not respond quickly and effectively to the military threat. The impetus for state survival drives the selection of defensive action options within the feasible set towards the most efficient option. Efficiency here is simply a matter of optimization: the most efficient option will be that which allows for the most enemy kills while minimizing losses. Thus, while the states within both ancient societies were motivated to attempt to

engage in war in the most efficient manner possible, the feasible set of possible defensive action options for ancient China and ancient Greece were very different. So, efficient warfare for Greek states was quite different in character than efficient warfare for Chinese states. This is how the model will serve to explain the differences in the dependent variable, the "warfare character" of ancient China and ancient Greece.

It is important to understand the limitations of this explanation of disparity in the warfare character of the two ancient societies. The model employed in this chapter will serve only to explain why strategic systems take the shape they do, and specifically how differences in the position of the locus of political power within a society vis-à-vis intensive military competition leads to fundamental differences in warfare character. This model will not comment on the superiority of one system over another. Quantitative military power is not a subject of inquiry here. This model says nothing about how powerful ancient China was compared to ancient Greece. The variable of "locus of political power" is entirely qualitative. The model is simply a means for providing an explanatory foundation for the qualitative comparative analysis of the warfare character of the two ancient societies to follow in subsequent chapters.

B. EXPLICATION OF TIME PERIODS AND VARIABLES

Before describing the function of the model, which is to explain disparity in the warfare character of the ancient societies, I will briefly explain why the specific time periods under investigation were chosen, and I will clearly define the variables participating in the model.

1. Time Periods

As noted above the time periods under investigation represent the two foundation periods for Western and Eastern warfare—the direct ancestors of the modern warfare traditions. These foundation periods represent the first attempts to develop coherent warfare character. Essentially, the interest in comparing the warfare traditions of these foundation periods lies in the implications such a study will have on the understanding of modern Eastern and Western warfare character.

The foundation periods of warfare in the two societies are generally the Archaic and early Classical periods in Greece, and the Spring and Autumn and Warring States periods in China. These time segments in China and Greece are generally contemporaneous. Yet, the specific time periods under investigation in this study are slightly out of temporal alignment. The general time periods under investigation will be about 700 B.C. – 250 B.C. in China and about 750 B.C. – 450 B.C. in Greece. The goal in choosing these time periods was to pick comparable time segments where the militant competition between small states within the two societies was of similar form and evolved throughout the course of the given time segments in a similar manner. Doing this creates a situation where the independent variable of "intra-societal competition" is held relatively constant across the two societies. With this independent variable set to equivalence across the two societies, the model will show that fluctuations in the first independent variable, the "locus of political power," is the proximate cause of fluctuations in the dependent variable, the "warfare character."

Other reasons for this specific choice of time periods have to do with aspects of the socio-political systems in place in the two societies. During these time periods, both

societies were made up of small warring states. The key to this similarity, however, is the way the small states of each society progressed through their respective time periods—the similarity of the progression is uncanny. During the time segments in question, both societies witnessed the concomitant development of small states, the eventual consolidation of stronger states and the absorption of weaker states, and finally, the dominance of a few large states.

2. Dependent Variable: Warfare Character

I identify the dependent variable to be the "military traditions" of classical China and classical Greece. Perhaps a better term to capture the essence of this variable is "the character of warfare" observed in these two classical societies. This term includes the manner in which war is fought and how the military is generally organized. Essentially it means "how" the military fights. I am not concerned with military effectiveness or power, but rather with structure, organization, function, and operation. To properly treat the gestalt of "military character" I will use a systems approach to the comparison of Chinese and Greek military character. By a "systems approach" I mean that "military character" must not be understood as collection of isolated factors related to warfare organization and operation, but rather a holistic system made up of various interdependent factors. Some of the key factors include concept of operations, command and control, command hierarchy, and strategic doctrine. These will be discussed in greater detail during the following chapters.

It is important to note here that this study will look at fluctuations in this dependent variable across classical China and classical Greece as whole societies, rather than looking at fluctuations within these societies. The military traditions that developed

from these two ancient societies were the result of continuous military activity between the small neighboring states within each society. The differences in military character between these small neighboring states were minimal compared to the dramatic differences in military character between the classical societies of Greece and China as wholes. Thus, the military tradition or "character" of classical China, for example, includes the military aspects of all the monarchical states participating throughout the classical period. Some generalizing assumptions will need to be made to support this generalized comparison, but, because of the large fluctuations in the dependent variable, such assumptions will not hurt the comparison.

3. Independent Variable 1: The Locus of Political Power

The concept of a "locus of political power" is derived from the notion that two independent entities within a state may vie for political power. The two entities are, of course, the state (or centralized government) and society (the people). For our purposes, the term "political power" means the ability of a state as a whole (including the government and the people together) to outwardly exert political force. Military action, taking the Clausewitzian view of this term, would be such an element of political force. In fact, I am specifically interested in military action as an extension of political force in this study. If two entities within the state may vie for this political power, a question arises about which entity exerts more control over this power. A continuum of political power can be imagined, spanning from one extreme, where political power is solely in the hands of the people, to the other extreme, where political power is entirely controlled by the centralized government. The balance position between these two entities is termed the "locus of political power."

The locus may sit anywhere on this continuum. It is most common that both entities, the government and the people, have some hand in controlling the political power, so the locus most often sits in the middle region of the continuum. This is not the case with ancient China and Greece, however. Each of these ancient societies represents an extreme case of the political power continuum. In ancient China, the locus of political power sits almost entirely to the side of governmental control of power. The small monarchical Chinese states were composed of strong centralized governments headed by single absolute rulers. The people had little power or interaction in state matters. Virtually all of the state power rested with the monarchy, and specifically the ruler. The converse is true in ancient Greece. There, the locus of political power was shifted entirely to the side of societal control of state power. The individual members of the city-states in Greece held the power to effect state action. These early patterns of democracy stripped away any central authoritative power and dispersed state power among the citizens.

I noted above that this study will be limited to a qualitative comparison of military character. I reiterate the point here by pointing out that the position of the locus of political power for the cases of China and Greece is a qualitative value, which allows me only to compare the "character" of the results of this locus position. Allowing for this qualitative comparison is the fact that ancient China and Greece represent opposing extremes of the political power continuum. This drastic difference in locus position is essentially what causes the differences in warfare character across the two societies. In the section below, which explains the exact function of this variable in the model, I will

show how the position of the locus of political power constrains and defines the set of possible defensive action options, thereby shaping the character of warfare.

4. Independent Variable 2: Competition

The variable of "competition" provides a market incentive for selecting the most efficient military system for employment in the face of extreme military competition. This variable is relatively simple, and is specifically designed to accompany this particular study of classical Greece and China. It means that the individual autonomous states within a society must be constantly under the threat of peril from neighboring states. This omnipresent threat of state peril must be so keen as to incite within each state extreme need and desire for survival. This need and desire must be exactly sharp enough to cause each state to take active measures to ensure its survival. There is no doubt that the states within both the classical Chinese and Greek societies met these necessary conditions. As Plato reminds us via the Cretan lawgiver in *Laws*, "an undeclared war always exists by nature between every Greek city-state" (626A). The warring monarchial states of China were no different.

It is also necessary to understand the importance of the form that the threat of peril takes. In the ancient societies of China and Greece, the threat was specifically in the form of an offensive attack by an opposing army. Implicit in the understanding of this independent variable of competition is the notion that the form of the response to the threat will not be different in kind from the form of the threat itself. This tacit understanding exists because of situations specific to the ancient societies. When an approaching army from a neighboring state was preparing to lay siege to the very existence of a state, diplomacy generally didn't work! There was really only one

appropriate response—to defend the state militarily. Later I will demonstrate that while diplomatic measures were often attempted, military response was the primary mechanism for meeting the needs for survival instantiated by the competition.

The function of this variable relies on the tacit assumption that amidst competition (of the kind described above), states (or groups) will always strive for efficiency—the measures they take to ensure their survival will be chosen precisely because such measures are the most efficient and economical means of achieving survival. The precise meaning of "efficiency" is understood best as a simple optimization problem: maximize military success (thus, enemy kills) and minimize losses. This may seem trite, but it's simplicity and appeal to rationality make it an important notion—groups will always endeavor to do as well as they can in the game of survival! And, "doing well" necessarily means achieving the goal in the most efficient and economical way possible. Thus, while the locus of political power constrains the feasible set of possible options—that set of possible measures that might be taken to ensure survival of the state—the variable of "competition" ensures that, from that feasible set of options, the most efficient mechanisms will be favored.

C. THE FUNCTION OF THE MODEL

The purpose of this section is to present a schema for understanding how the independent variables described above interact and function to shape the character of warfare for a given state. I will first proffer a general description of the model function, and then direct further discussion towards two specific model scenarios corresponding to two values of the locus of political power variable. Scenario 1 will describe the function of the model when the locus of political power is largely to the side of societal control,

while scenario 2 will discuss the model function with the locus shifted to the other extreme, the state-control side. In chapter three I will directly apply the model presented here to the specific cases of ancient China and Greece.

1. The Function of Independent Variable 1: The Locus of Political Power

A state must use political power to exert energy to form and employ a military. How that political energy can be exerted, and what that political energy is capable of accomplishing, are functions of where, on the political power continuum, the political power of the state derives. (Does power come from the people? The government? Some combination of the two?) Specifically, the position of the locus of political power along the political power continuum has three important implications for the development and implementation of military force. The locus position affects (1) how resources are mobilized, (2) how those resources are organized, and (3) how those resources are then employed. By resources, I mean both material and manpower resources necessary for the formation and implementation of military force.

This situation works in the following way. First, different "locus of power" positions constrain in different ways a state's ability to mobilize resources. A state always has a set of possible ways it can mobilize resources for the creation of a military force. The position of the locus of political power defines this set by constraining the state's mobilization options. Once resources are mobilized, the state has a set of feasible options for organizing these military resources. This set is defined by the position of the locus of political power, as well as how the resources were initially mobilized. Finally, once these resources have been organized, the state has a set of possible options for

employing them. This set is defined by the position of the locus of political power, as well as the way the resources have been organized.

Thus, according to this model, military development and employment by a state is a three-step process: step one: mobilize resources; step two: organize the resources; step three: employ the resources. The locus of political power plays a role in each step by constraining the feasible set of possible ways each step may be carried out. The second and third step, organization and employment of resources, are further constrained by the steps that precede them, meaning that the three-step progression must form a pattern—each step must follow logically from the previous step.

So, the specific function of the locus of political power is to constrain (via mechanisms soon to be described) and thus define the set of possible ways each of the three military development steps may be carried out. Each of these sets may contain a number of different selectable options. What determines which option is selected from a given set? For example, if a certain "locus of political power" position determines that there are several ways the state might organize their resources, how and why is one way to organize ultimately chosen over the others? The answer is related to the function of the variable of competition.

2. The Function of Independent Variable 2: Competition

Intense and constant competition in the form of offensive military actions between small states creates a situation where each small state will need to respond to this competition militarily if it hopes to survive. As explained above, this situation ensures that the form of a state's response must necessarily be similar in kind to the form

of the offensive action if the state is to survive. Thus, the constant threat of peril-by-military-attack begets a military response.

This variable of competition does something more. The critical and immanent nature of the threat instantiates a need for the military response to be as efficient as possible. The conditions of constant competition ensure that states cannot afford less than maximum efficiency. The immanence of the threat and the immediacy of the response required disallow mistakes and responses that are inefficient. In this context, maximizing "efficiency" means minimizing state losses while maximizing enemy kills. The challenge to states, then, is likened to an optimization problem. The consequence for a state in this scenario that fails to optimize the efficiency of its military response is certain peril.

Essentially, the variable of competition drives all choices of military posture and action towards maximum efficiency. Thus, when the locus of political power determines which options for state resource mobilization, organization, and employment are feasible, the variable of competition ensures that from each feasible set, the most efficient option will be favored, and usually selected.

Warfare character is thus derived via the following process. The locus of political power determines which defensive action options are possible. The variable of competition favors the selection of the most efficient options from that feasible set. When this process occurs repeatedly in similar ways by all of the small states within a society over an extended period of time, certain defensive postures and actions are selected and used again and again. These "most popular" defense mechanisms become

doctrine. Eventually these doctrinal mechanisms become the "military character" of that society.

In the following sections I will consider two specific inputs into this model: the case of the locus of political power shifted towards society, and the contrasting case of the locus shifted towards the government. These sections will describe the different ways each extreme locus position serves to constrain and define resource mobilization, organization, and employment options.

D. SPECIFIC SCENARIOS

1. Scenario 1: Political Power in the Hands of the People:

When the locus of political power rests at the societal end of the political power gamut, individuals within the state control the state power. Presumably, this means that some sort of democratic or ad hoc government organization is in place. The government is decentralized almost to the extreme point of consisting of a flat hierarchy. Power rests with the individuals. Since no single entity controls power or can guide state decisions and actions, some sort of group consensus must be reached if decisions are to be made and enacted. Because of this, the set of possible state-organized military actions is heavily constrained.

Since the political power is distributed, relatively evenly, among the citizens, the individual citizens control the resources and are responsible for the mobilization of resources. This includes any material resources related to defense, like armor, weapons, food, and medicine, as well as human resources—the citizens themselves are the human resources. When the people decide (presumably by consensus) that resources must be mobilized to meet the demands of militant competition, there is no guidance from a

central authority to organize this mobilization effort. Each citizen will be responsible for fighting, since a standing army suggests that a centralized government authority has power to organize such an army. Furthermore, each citizen must be personally responsible for showing up at the proper predetermined location, and each must acquire his own armor and weapons. Combat training is almost impossible, since it would require strategic guidance from a central authority with strategic vision. Also, training would take away time from the citizen's duties as a member of society. For all of this to work and be effective, only the simplest of mobilization options would be feasible. In the absence of central strategic guidance, simplicity is the key to effectiveness.

Simplicity must also play a defining role in the organization of resources. How should military forces be organized? Of course, some initial conditions, like terrain, weapons availability, and force size play a role in determining possible organization strategies. Also, a general concept of operations may factor into organizational choice. This concept of operations may be provisional at best, perhaps taking the form of a simple principle like "a coordinated organizational structure and employment strategy is generally superior to uncoordinated organization and employment patterns." Ultimately, the guiding principle is simplicity. Again, bereft of centralized strategic vision and guidance, citizen soldiers will self-organize. Since the troops will have had little or no training, since each soldier will have similar equipment, since they will all play essentially equal roles in the mobilization process, and since they are self-organizing, there will be little or no differentiation of military roles or rank. The military formation will consist of multiple individual soldiers, each with the identical task of killing the enemy in ways dictated by their equivalent weapon systems. If there is a military leader,

such a person will be appointed by the soldiers and will not be empowered to make critical command decisions the way a state appointed leader would. Generally, the military organization will mimic the societal organization and will be a flat hierarchy.

With this organization (which is really a lack of organization) to work with, few military options are available. The military task must be simple and obvious to the common soldier if this undifferentiated group of untrained soldiers is to effectively cooperate in battle. Little or no command and control is possible. Without a central strategic guiding force, complex maneuvers are not an option. Only the simplest of tactical maneuvers may be executed. This situation may lend itself to chaotic swarming patterns where individual soldiers target random individual enemy soldiers. This sort of military behavior seems to be what one author would call "below the military horizon" (Turney-High), and thus, may not be favored as the most efficient possible option. Other tactical options might involve direct coordinated assaults at the enemy. These sorts of techniques lead to what will later be discussed as a "linear concept of operations." A general rule for tactical action vis-à-vis the constraints set by a societal-centered locus of power may be "the simpler the military task, the greater the efficiency of that action."

2. Scenario 2: Political Power in the hands of the Government

When the locus of political power rests at the other extreme of the political power gamut, the side of the state government, a centralized governmental entity controls state power. Since the locus is at the extreme edge of the gamut, the individuals within the society have no power, so this type of government is presumably a monarchy or dictatorship and not a decentralized democracy. In a monarchial situation, which purports to be the best example of this extreme locus of power position, a single figure

within the government has supreme control over state power. The situation where a single monarch holds all state power requires that the monarch delegate tasks to subordinates. This necessitates the development of a deep and intricate hierarchy, allowing for all state resources to be controlled by one person. Since this single monarch is the sole source of strategic vision and guidance, and this single monarch controls all state power, the set of possible state-organized military actions is hardly constrained at all.

In this situation, a highly centralized monarchy controls all material and human resources. Mobilization of these resources can be effected by a single guiding force with strategic vision. The monarchy determines what materials need to be acquired, who must report for duty in battle, and where people and resources should be placed. Often, a centralized monarchy controlling the whole of state power is indicative of a society with a high degree of role differentiation. Thus, a powerful monarchy will easily be able to develop a standing army since it has the resources to fund, feed, and train such a societal organization. If this is the case, resource mobilization for war is simplified, and begins long before actual combat, with the formation of the standing army. The most efficient ways of mobilizing resources for war usually center around having a standing army in place, ready for combat. In this way, mobilization may be controlled and coordinated to fit within a larger strategic scheme.

Likewise, organization of forces and resources may be based on planned strategic design by the monarchy—a concept of operations—rather than on ad hoc mechanisms. More organizational options abound. A powerful monarchy would normally be able to instantiate a hierarchical command and control structure in the standing army, allowing

for large differentiation in rank and duty. Thus, depending on how well resources were mobilized, a monarchy has a vast amount of options for organizing these resources. The most efficient ways of organizing forces and materials will usually involve organization based on some strategic schema, allowing for different groups to undertake different military roles simultaneously. Thus, "combined arms" force structures, designed for flexibility and effectiveness, will usually be favored.

Since few restrictions are placed on how the monarchy organizes and then employs resources, the way the resources are organized will usually determine the best and most efficient ways for those resources to be employed in battle. This case is very different from the above case where the locus of power rests with the citizens. In that case, the position of the locus heavily constrains all three stages of the military development process. Here, the position of the locus admits almost no constraints on the military development process. Thus, the second and third stage of this process, the organization and employment of resources respectively, are heavily dependent on the preceding stage of development. This is most apparent in the final stage, the employment of resources in battle. The way a military force may be employed in battle, in this case, is greatly dependent on the military's organization. Specifically, in order for a military to be effective, there must be a sufficient "fit" between the way the military is organized and the way it will accomplish its tasks.

This notion of the necessity of a "fit" between the organization and function of a military force points to an important feature of the monarchial situation. Unlike the contrasting situation of societal power above, a monarchy has the power to enforce a central guiding strategic vision on the military development process. Because of this, a

predetermined concept of operations may play a defining role in how the military is organized and employed. While a concept of operations may play a role in the above situation of societal power, its role is diminished there because of the constraints set by citizen power control. A state where citizens control the political power simply does not have the ability to implement a rigorous concept of operations, unless such a concept fits within the rigid constraints imposed on military organization and employment. Because a predetermined concept of operations plays a defining role in the case of the monarchy, more strategic "non-linear" military methods will be favored.

One result of this comparison of extreme positions of the locus of political power is that that we are likely to see a much more varied set of military activities from a monarchical society where the monarchy controls all the power, since many more options are available, and the outcome is affected heavily by a predetermined concept of operations. The society where the people control the power is likely to display limited variation in military activity. Also, the military systems of the monarchal state will often be more advanced, since such a state has the power to devout intellectual energy to the study of strategy and tactics in order to develop robust concepts of operations. No matter what the exact military outcomes are, the "military characters" stemming from these two scenarios will be quite different from each other. I will now turn from a discussion of the basic functions and features of this model to a discussion of the results of mapping this model onto the specific cases of ancient China and ancient Greece.

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III. THE MODEL APPLIED TO ANCIENT GREECE AND CHINA

In ancient Greece, the locus of political power in each city-state was shifted far to the side of society. In the states of ancient China, the locus was shifted far to the side of the monarchical governments. As noted above, both societies witnessed intense inter-state military competition that forced individual states to organize and employ militaries to ensure their survival. In this chapter, I will examine the socio-political histories of ancient Greece and China. I will focus on elements of the histories that relate to the model presented in chapter two, particularly the "locus of political power" variable. Each socio-political history will be divided into phases, which follow chronologically. Sections on social and cultural elements related to the socio-political systems will also be included. Following each phase (or section), a commentary will be given describing how socio-political elements depicted in that phase served to constrain and define the set of military action options for that society. I will consider the story of ancient Greece first.

A. ANCIENT GREECE (CIRCA 750-450 B.C.)[5]

The advanced civilization of the Mycenaean Age Greeks was abruptly destroyed by invasions around 1200 B.C. The Dorian settlements across the Peloponnesus that followed marked the beginning of the Greek Dark Ages. The great palaces of the Mycenaean Age vanished, along with all knowledge of administrative techniques, writing, and artistic production. Complete isolation from neighboring Persia ensued. From this Stygian darkness and isolation, a powerful force slowly began to emerge in the

[5] The major sources for this section, if not otherwise noted, include: Bury, Green, Hammond, Roebuck, and Starr.

form of small, scattered towns. These towns grew in size, population and wealth, and eventually became known as city-states (*polis*)—small, autonomous states empowered by the will of their citizens. Indeed, the story of ancient Greece is a story of something arising from nothing. The new towns at the end of the Dark Ages and the beginning of the Archaic period (around 750 B.C.) had no historic guidance on which to base the structures of their social and political organizations. The development of the towns was directed by the common needs of families for land and security. Clan-based towns soon became acephalous cities where relations of kin dominated social structures. These cities eventually grew into semi-democratic city-states.

Political power, in these early forms of Western government, was determined by the will of the inhabitants, as they decided what would be best for their community as a whole. Survival in this dangerous and uncertain time was best achieved via group effort. Eventually, the Greeks would build a civilization based on these themes of kinship and group effort that dominated the early post Dark Age towns. Since each individual played an important role in the survival of these early towns, Greek civilization would witness the rise of the individual concomitantly with the rise of the city-state. The two were interdependent and inseparable. Most importantly, the story of the ancient Greeks is one in which each individual citizen played an important role in controlling and directing the political power of the state. With the locus of political power shifted entirely to the side of societal control, military options would be constrained and defined accordingly.

The parallel rise of the individual and the city-state was not a peaceful one. It was shaped, and perhaps even motivated, by intense and constant militant activity between and within these evolving states. Thus, the individual became both the developer and the

defender of his city-state. His survival depended on the survival of his state, and so he was motivated to seek out ways to ensure such survival of state and self.

1. Phase I: The Scattering—Early Archaic Period (750 – 650 B.C.)

In the beginning of the Archaic period (around 750 B.C.), hundreds of small isolated towns littered the Greek peninsula. Since the main desires of these clan-based towns were for land and security, these settlements thrived in fertile mountain valleys and coastal flats, areas favorable to agriculture and surrounded by natural boundaries. Isolation was not complete between the towns and cities of Archaic Greece, however. Greece's many natural harbors encouraged sea borne activity, which connected the Greek peninsula. The result of this partial isolation was the development of a common pattern of civilization with many local variations.

The importance of this semi-isolation of Greek cities within the Greek peninsula, and almost complete isolation from Europe and Asia, is that a new culture was to be born, based on the principles of clan-based rulership of small towns and cities, where the individual took an active part in political activity. One author notes that at the outset of the Archaic period, the small isolated communities were forced to turn inward upon themselves, developing "narrow and jealous feelings of loyalty to their own traditions and customs" (Roebuck, 176). Needs for defense and economic expansion and diversification supported these trends of state unity.

The dominant social organizations reflected and increased these unifying trends within the states. These early city-state societies were based on the patriarchal family. Several families, linked patrilineally, formed a clan or *genos*. The senior member of the clan, linked directly to the original ancestor, held the role of chieftain. These early

traditions of tribal kinship were soon extended to larger groups. When the need for common action in war and peace caused several clans to bond together, a *phratry* (brotherhood) was born, consisting of a few aristocratic clans and many tenant farmers. A *phyle*, or "tribe," was a larger group, celebrating a common tribal ancestor. Eventually, these ties of kinship, which dominated the social organization of the early city-state, would be replaced by larger bonds of civic duty and loyalty to the larger city-state. The socio-political systems of the later Archaic city-states would eventually replace the earlier social systems of the early Archaic tribal state.

Much of the information we have about early Archaic period social and political organizations comes from the Homeric poems, completed during the eight century. In Homeric society, the early *phyles*, which later evolved into city-states, were two-class systems. The clan chieftains, along with their families, were the nobility. This class of nobles governed the common people, composed of tenant farmers, peasants, and craftsmen. Economic division was reinforced by the division created by the two-class kinship structure. Commercial exchange between towns was limited, so the communities were forced to be self-reliant. Homeric tradition tells us that the leaders of these small states often called themselves "kings". Yet, they were little more than "war chiefs." In battle, they led the tribe. In peace, they spent their time engaged in agriculture and herding like the rest of the population. Often, to secure their position, these "kings" would have to prove themselves in battle, further demonstrating the acephalous character underlying the early city-states.

As the city-states began to develop during what is sometimes referred to as the "age of revolution," the century spanning 750 to 650 B.C., governmental units began to

see shits in power. The authority of the "king" was now extended across a counsel of nobles. The people also played an important role in these early governments in the form of an "assembly of the people." These city-states were still small, about the size of a small American county (Starr, 207). As a result of its size, the citizens could assemble easily at the acropolis, a central location atop a hill, originally used as the guard station for the town's water supply. The citizens would gather there to vote on issues and elect officials. The city-states were sufficiently small to allow all the citizens to know each other. A sense of communal spirit was easily developed. Aristotle later remarked on the optimal size of a city-state:

> A state consisting of too few people will not be self-sufficient, and one consisting of too many will not easily retain the quality of being a community of citizens, for who will address them, unless he has the lungs of a Stentor? It is necessary for the citizens to be of such a number that they know each other's personal qualities and thus can elect their officials and judge their fellows in a court of law sensibly. (Starr, 207)

As the power of the assembly grew, the tradition of the noble birthright decreased, and was replaced by election of state officials. The position of "king" was replaced by a group of elected officials called *archons*. The title of "king" changed its reference to mean that person (*archon*) in charge of conducting religious rites.

The early city-state was not yet a democracy, however. Noble landowners still dominated the government. Yet, as one author points out, the city-state was still based on the democratic principles of "basic equality, even-handed justice, participation in public activities, and government by law" (Starr, 209). Pure democracies would soon develop from these early democratic seeds. "Local patriotism" was implicit in this early system, marked by the veneration of state heroes. Furthermore, all citizens shared the

responsibility of maintaining and defending their political unit. It was during this time, about 700 B.C., that we see the first uses of the Greek phalanx and hoplite soldiers.

2. Commentary:

We see two interrelated trends begin during this phase. First, Greek city-states are created virtually overnight from the ground up—from tribes to provisional state structures. With no direction or guidance, the onus is on the citizens to coordinate efforts to create a society according to the needs and wants of the group. The second trend, which may function partially as the cause and partially as the effect of the first trend, is the rise of the individual. Since the common town people built their own societies from the ground up, it is natural that they should have retained power as the government became increasingly complex and differentiated. This is exactly what happened. Once the people of the towns became the determiners of their own physical and political destinies, it became increasingly difficult to relieve them of this role. And so the assembly developed, and became the political dynamo of the city-states' political machinery. The locus of political power was, from the beginning, entirely in the hands of the citizens.

With the process of political maturation came the need for defense against aggressive and opportunistic neighboring city-states. Perhaps this threat of state peril was one of the factors that drove the city-states to develop adequate political machinery so quickly. Morton H. Freid notes that it is not a non sequitur for the emergence of a new state to catalyze its people such that the necessity for defense is precipitated. He suggests that "the leap to state occurs in a field of such leaps, and that newly born state 'A' finds itself not to far from newly born state 'B'." Furthermore, "the state at birth is...an

extraordinarily predatory formation and will impose its form on less complexly structured societies" (479). (Interestingly, Freid introduces this hypothesis for use in a discussion of Chinese state formation. It applies equally well to the Greek city-state scenario.)

In reality, a systems approach to understanding the concomitant rise of city-states with the rise of militant competition between them, where each gives birth to the other in a recursive cycle, is more appropriate. As Starr reports, all of the major revolutionary reforms and developments [in Archaic Greece] occurred concomitantly about 700 B.C. Indeed, "during the throbbing flow of great ages many changes run concurrently, so closely interlocked that one can hardly define which is cause and which is effect" (205-206).

Regardless of how or why it came about, states suddenly needed to organize themselves for defense. The model presented in the second chapter suggests that military development generally follows a logical three-step process of resource mobilization, organization, and employment. What resources could they use? How could they organize and employ these resources? Colonization and trade increased the availability of bronze armaments. At first, only the wealthy citizens could afford such armaments, and thus, were the only members of the first Greek militias. Later, most citizens owned and were responsible for bringing their own equipment. As for human resources, who else could be mobilized save for the very citizens of the state? Mobilization of resources had to be kept simple: 'each citizen must bring his own equipment, and make sure he shows up on time and at the pre-determined location for battle!'

Once resources were mobilized (in this necessarily simplistic and unsophisticated manner), how could they be organized? The first citizen militias were entirely self-

organized. Since the citizens were basically equal within their societies, role differentiation within the militias was unlikely to occur—no one had the authority to instantiate such differentiation. Also, if someone was elected to a position of leadership, such as the polemarch or "general," that leader would be unlikely to differentiate roles and ranks because doing such would not only undermine the equality of the soldiers, but would require training. Since no standing army existed, training was almost impossible.

While the exact details of these early Greek military systems will be described in the chapters to follow, it is important to note here that the Greek city-states had limited options for military action. How could a group of socially equal, untrained warriors organize and employ themselves for effective defense of the city-state? Perhaps they could meet at the designated battle location with all their equipment and run willy-nilly in a mass of armor at the enemy, each citizen-soldier marking an opponent for one-on-one combat. Perhaps they could use uncoordinated swarming patterns. Either way, coordinated formations and maneuvers were out of the question unless a standing army and rigorous training programs were instantiated. Perhaps there *was* a way to self-organize in a coordinated manner without training and without role differentiation. The notion that 'coordinated defense is inherently superior to uncoordinated efforts' is a reasonable *a priori* assumption. It is believable that the early Greeks would have made such an assumption. I submit that the phalanx structure allowed untrained, socially equal troops to easily self-organize and *coordinate* their defense efforts with virtually no command and control. I suggest that the phalanx arose out of the need to find the most efficient and effective way of employing untrained and undifferentiated troops in battle. In the chapters to follow, I will support this claim with evidence, and show specifically

that the phalanx system had built in command and control elements, allowing for undifferentiated, self-organized soldiers to fight effectively.

3. Phase II: Expansion and Reform (650 - 550 B.C.)

As city-states were developing into cohesive political units on the Greek peninsula, a colonization movement began to sweep into the surrounding areas of the Mediterranean, Europe, and Asia Minor. The growth of the cities into urban societies created a need for comprehensive trade networks with outlying areas to be developed. While agriculture remained the dominant mode of life, the Greek peninsula would have to rely on imported food and material goods if it was to transcend its subsistence farming economy. Urbanization was coupled with rapid population growth, which supported the need for colonization. Thus, colonization of surrounding areas allowed for increased trade and the dispersion of the growing population. Interestingly, the colonization movement did not result in imperialism and remote control from mainland Greece. Since the founding cities were themselves in the process of development, strong ties were not developed between them and their colonies, so the colonies broke off and became autonomous city-states, determining their own political destinies. The result was a wave of Greek expansion that spread through parts of Asia Minor, Europe, and Northern Africa.

While colonization was changing the character of the countryside, economic growth and political reform were reshaping the character of the Greek city-state. The earliest coins were issued about 650 B.C., accompanying a simultaneous growth in the role of the marketplace, the *agora*. The "economic spirit" surged through Greek civilization and motivated increases in the activity of commerce, industry, and

agriculture. City-states expanded in population and in size, as farmers moved outwards to extend their lands. Trade increased over land and by sea. The population became increasingly differentiated, creating the need for the government to follow suit.

These rapid economic changes spurred political upheaval. The period from 650 to 500 B.C. is sometimes called the "Age of Tyrants." Individual leaders frequently seized power in these tumultuous city-states and made violent and drastic changes in their political and social systems. Often, these "tyrants" were nothing more that reformers, pushing the socio-political systems closer and closer to the democratic ideal. These reformers introduced the practice of publication of the law. This marked an important step in the rise of the individual—each citizen demanded that he and his noble government leaders share a common understanding of the law.

The rise of the Tyrants depended on the power of the rising middle class of wealthy landowners and merchants. Rather than a step backwards, away from democratic ideals, Tyranny helped solidify the role of the people, particularly the middle class in government activities. The most famous of these reforming "tyrants" was perhaps Solon of Athens, elected to the position of *archon* in 594 B.C., and given a mandate to reorganize the government. Solon grouped the citizenry into four categories based on wealth and ensured that the relationship between the state and each citizen was based on justice. All four groups of citizens played relatively equal roles in government activity. He would later be regarded as the "wise founder of the Athenian democracy" (Roebuck, 207).

4. Commentary:

Assume that the phalanx system was the most efficient and effective way of employing undifferentiated, untrained soldiers in battle, given certain terrain and armament constraints. It seems clear that a rigorously trained standing army would have been far superior to any untrained phalanx force. Such an army would have had role differentiation and command and control elements, which would have allowed it to maneuver and simply out-flank an opposing phalanx, attacking it at its weak point. Why, then, did the city-states not move to develop standing armies with these capabilities? The simple explanation is that the citizens, who would have been the only candidates to compose such an army, controlled the political machinery. Who among the citizens would be appointed to serve as a professional soldier? Since the people controlled the power, no one had the sole authority to assign certain people to military duty and exclude others. Perhaps citizens could have volunteered for such positions. This is unlikely. The citizens were busy tending their farms, serving as merchants, running the political machinery. They were busy engaging in sports, theater, and Greek life. Who would have volunteered only to watch his associates, friends, and family continue to partake in the pleasures of Greek life?

For the Greeks, it was better that everyone share the burden of state defense in the same way than to elect a group of professional soldiers to do the fighting for the rest of the state. Greek politics was a communal event. It was a product of the efforts of all the people combined. Warfare, a physical extension of such politics, could have been no different. Even during the age of tyrants the reformers, who gained for themselves an unusually large amount of state power, did not have enough power to create such societal

changes as a standing military. The citizens would not have permitted this. The reformers knew their limitations. Also, the reformers did not want such a thing either. Their reforms and brief periods of rule were based on equality and power of the people.

Better than mass swarming tactics, better than uncoordinated Guerilla tactics, the phalanx proved to be the most efficient way for the untrained and undifferentiated citizen-hoplites of ancient Greece to mobilize, organize, and employ themselves in battle for the defense of the state.

5. Phase III: Consolidation (550 – 450 B.C.)

By around 500 B.C., the Greek states were being molded into a bipolar world with Athens and Sparta as the leaders. Democratic Athens was a place of political and social experimentation where the individual citizen played a major role in the institutions of the state. Sparta remained a conservative militant state, fostering rigid discipline among its citizen soldiers. At the eve of the Persian Wars, these two powerful city-states were the leaders of opposing confederations (leagues) of surrounding city-states, polarizing mainland Greece. Thus, the hundreds of small city-states that littered the early Archaic period landscape were swallowed up into fewer and fewer large leagues of states, eventually attaching themselves either to Sparta or Athens.

By 508 B.C., the non-noble Athenian middle class had already achieved a sense of political and social independence from the reforms of Solon, and later by the Pisistratids aristocrats. Cleisthenes, in 508 B.C., gained power in Athens through popular support, and made the final leap into democracy. His two goals were to "break the power of local and social units in favor of the state as a whole," and to "lodge the essential power of the state in the hands of the people" (Starr, 255). Cleisthenes set up 170 *demes*

in Athens, small territorial units with the power of local self-government. The citizens of each *deme* were registered, and were able to participate in the assembly as a member of a *deme*. To prevent political disunity, the 170 *demes* were dispersed among ten tribes, based on location. This dispersion of citizens into *demes* cut across bonds of kinship and made residency the new requirement for citizenship. The assembly of the people now held the power of the government. They became known as the Council of Five Hundred and were charged with electing state officials, who would hold offices for one-year periods. The importance of the *demes* and the Counsel of Five Hundred was that it replaced clan-based influence in government with the equality of the individual citizen. The term *demokratia* became popular, meaning "rule of the people."

Other reforms followed. As the city-state grew, the size and role of its military grew. In earlier times, a *polemarch* or "general" was elected along with the other elected officials. He was charged with the duty of leading the phalanx in battle. By 501 B.C., a new elective office, the *strategia*, or "generalship" was instantiated. Each tribe elected one general, creating a board of 10 generals acting as a war council in charge of campaigns.

Sparta took a different and anomalous path. Life in Sparta was heavily regimented. Farms were cultivated by *Helots*, a group of slaves, so that citizens could devote their time to training for and engaging in warfare. Sparta's goal was to develop a military machine capable of dominating the Peloponnesus. The threat of *helot* revolt, however, stymied their ability to extend their military power far from Sparta. By the late sixth century, Sparta was the dominant member of an alliance of various nearby city-states. King Cleomenes reorganized the government into a two-part organization made

up of the Spartan assembly and a congress of representatives from the allied city-states. Only policies approved by both sides could be enacted. This system prevented the Spartan conquest of Athens and set the stage for Spartan and Athenian cooperation during the Persian onslaughts following 500 B.C.

6. Commentary:

Interestingly, as the city-state government underwent major changes and developments from the seventh to the fifth centuries, the military expressions of those governments, the phalanx, hardly changed at all. From its inception around the early seventh century to the eve of the Persian wars, phalanx battle remained the same for more than two centuries. Why did this happen? I see two interrelated reasons for this phenomenon. First, while the city-states changed and matured, the central organizing logic of the city-states, the kernel of their existence, the notion that the power of the state should rest with the people of the state, did not change. The theme of citizen-rule, which was born in the beginning with the first small towns, was carried through to the Classical age. I have argued that it is this very principle of political power in the hands of society that constrains, and thus, defines the feasible set of possible defensive action options. The phalanx, which proved to be the most efficient method of employing untrained citizen-soldiers in the eighth century, was still the most efficient and effective defense in fifth century Greece. With the power still in the hands of the people, the constraints on the feasible set of defense options had not changed.

The second reason for the stasis of the phalanx form vis-à-vis the changes in government was that the character of the opposition to the phalanx—other phalanxes extending from other city-states—did not change until the Persian wars. No city-state

was pushed to innovate its military because no other city-states had done so. They were all constrained in the same way by their type of government. There are, of course, two exceptions to this statement: Athens and Sparta. But these exceptions make sense. Sparta with its standing army of hoplite-citizens supported by state-bound *Helot* slaves, and Athens with its tax supported navy, were the two military innovators of ancient Greece. But these innovations marked a difference in degree from the rest of the city-states rather than a difference in kind. Thus, Sparta was more powerful than its neighbors not because it employed different military techniques, but because it had a more powerful phalanx—degree, not kind. The dual vortex which swept the late fifth century Greece by drawing the city-states into the poles of either Spartan or Athenian dominance makes sense in light of the superior military power of Sparta and Athens.

Perhaps another, less dominant reason adds to the explanation of the stasis of the phalanx form. Consistency makes sense when what you are doing continues to work. Once the phalanx had been instantiated as the dominant mechanism for defending against the constant militant threats, it became harder to innovate. Since the phalanxes of all the city-states were basically the same, and thus, the threat was the always the same, a consistency bias existed for using the phalanx. The people became familiar with phalanx battle. Eventually, it became a part of the culture. Other aspects of culture were allowed to emerge through the phalanx battle system, such as esteem for the ideals of honor and bravery in battle in the tradition of the Homeric heroes.[6] Also, the stasis of the phalanx form provided an acceptable balance—a "fairness" in battle. The Greeks saw virtue in

[6] Note that this is different from Victor Davis Hanson's view that "cultural factors are the shapers of warfare character." Later, I will discuss Hanson's "culture" argument and demonstrate that my view of cultural factors, as entities that emerge through existing state systems, is more reasonable.

fairness in all facets of life, warfare included. Shifting the balance via innovation would have been seen as unfair and lacking in virtue. Essentially, Greek warfare became path-dependent. Once the phalanx warfare system had been initiated as the accepted defense mechanism, the fate of Greek warfare was sealed.

This notion of the role of cultural factors such as ideals of honor and bravery and the virtue associated with fairness should not mislead the reader to think that these are the dominant shapers of warfare character. Some scholars, especially Hanson, make this argument, and I will, in a later chapter, examine such flawed arguments in greater detail. However, cultural factors cannot be ignored. While the socio-political situation vis-à-vis militant competition shapes warfare character, cultural factors play a more flexible secondary role. These factors underlie the shaping process, and emerge through whatever current socio-political and military systems are in place. While they don't play a major role in shaping the dominant structures of warfare character, they do respond to and emerge through those structures, tweaking them, and sometimes giving them new or additional meanings. For example, heroism and bravery are dominant themes in Greek culture. While the phalanx is strictly a socio-political phenomenon, ideals of heroism and bravery attached themselves to phalanx battle after its inception. If a different form of Greek warfare had developed based on a different socio-political situation, these ideals of honor and bravery would have likewise emerged through that form of warfare. But, since phalanx battle developed, these ideals became a part of the phalanx form, and altered its meaning accordingly. Rather than just a defense mechanism, phalanx battle became a means for an individual to prove his honor and courage.

Cultural factors sometimes serve to proffer false explanations for certain phenomena, especially in warfare, because of the power cultural factors have in uniting and motivating communities. For instance, archers were rarely used in phalanx battle, probably because of the coordination and training difficulties associated with employing both archers and infantry. Yet, 'cultural factors' suggest that the reason archers were not used was because of the dishonor and unfairness associated with using missiles—hand to hand infantry battle was seen as the only honorable way to war, at least according to the story told by cultural factors. Cultural sources, such as Homer's *Iliad*, where the bow is a "weapon of cowards" (Gabriel, Culture 90), are used to support false explanations like this. The point is that we must be careful not to fall into the trap of confusing cultural factors with socio-political factors as the shapers of warfare character. Cultural factors will always emerge secondarily, after warfare character has been crafted from socio-political constraints, and may serve to obscure the socio-political explanations for warfare character. Below I will discuss some key Greek cultural factors in hopes to clarify their role in the phalanx battle system.

7. Cultural Factors

Any account of the socio-political history of ancient Greece would be incomplete if not supplemented by a brief account of the surrounding social and cultural institutions. Greek religion, philosophy, art and sporting events all demonstrate the power and importance of the individual within the community. The "Greek way," as it may be called, permeated Greek life, played a role in shaping socio-political constructs, and was an emergent property in the Greek way of warfare. I will briefly mention some of the more important and relevant aspects.

Homer's *Iliad* and *Odyssey* were the first expressions of the new Greek culture. This first leap out of the cultural dark ages presented to everyone the famous heroes of the Trojan War era in literature form. The Olympian deities and the religious traditions based on them became common possessions. The term "religion" must only be loosely applied here to the Greek conception of the worship of Olympians. There was no religious dogma, and priests played a minor role, acting as oracles or figures of cultural heritage. The Greek mind was dominated by the call to rationality rather than religious obedience, and was thus free to work within the framework of religion or to deny it all together. In actuality, the Greek gods became prominent figures in political institutions, as each city-state would focus its devotion towards a single deity, almost like a state mascot. The importance of this situation lies in demonstrating that the individual had the freedom and the power to think freely and rationally about the world around him, whether that world was the cosmos, or the socio-political system. After Thales of Miletus, the first of the pre-Socratic philosophers, emerged in the early seventh century and proclaimed "everything is water," proffering a *logos* based on logic and rationality to make sense of the basic elements of his surroundings, there was no turning back to the Mythos-based mechanisms that dominated Mycenaean and Dark Age Greek thought. Because the individual had the power to think freely and rationally, he had the power to speak his mind, and to change his situation, and shape it to his liking. As Euripides reminds, "a slave is he who cannot speak his thought" (Hamilton, 43).

A revolution in thought had occurred with Thales, though it was in the workings long before he uttered his philosophy. Following Thales was a train of philosophers who likewise sought to explain the basic elements of the universe which surrounded them,

using *logos* rather then *mythos*, logic and rationality rather than myth and superstition. Anaximander, Anaximenes, Heraclitus, Parmenidies, and Pythagoras paved the way for the robust philosophical teachings of the Socratic philosophers, who have so shaped our Western thinking patterns. The dominant theme in Greek philosophy is the power of the individual to understand himself and his universe. While veneration of the Homeric heroes dominated the thinking patterns of the early Archaic period, the move to the Classical period, spurred by this thinking revolution, shifted the focus and object of veneration to the rational and physical power of the individual's mind and body. Much of the philosophical thought of this time centers on the virtue of exercising both physical and intellectual capacities. The individual became the hero, usurping the role of the great Trojan war legends. This theme of the celebration of the individual emerged in other ways. Much of the philosophy at this time was political, especially Plato's *Republic*, proffering the virtue of the "philosopher-king," who would guide the people philosophically, while leaving their political fate in their own hands. He insisted that the primary characteristic of a city-state must be its size. Fixing the number of citizens of his ideal Republic at 5,040, he emphasized that the "greatest advantage for any state is that the citizens are known to one another" ("Laws" 737-738). Plato's attempts to reform the city-state via education were continued by his student Aristotle who claimed, "man is by nature an animal intended to live in a *polis*" ("Politics" 1253A).

Besides philosophy and religion, Edith Hamilton rightly points out that "the Greeks were the first people in the world to play, and they played on a great scale" (31). Athletic games and combat sports were a central part of early Greek life. They played in races of foot and chariot, they leapt from racing chariots, they engaged in contests of

music, and they danced. In the theater, comedy and tragedy demonstrated their equal love for the bitterness and sweetness of life. For, "those who do not know the one do not really know the other" (Hamilton, 33). Hamilton notes that such an outlook on life, of the joy found in sport, combat, comedy and tragedy, and even the simple pleasures of life—"Dear to us ever is the banquet and the harp and the dance and changes of raiment and the warm bath and love and sleep" (Homer, "Odyssey" VIII: 245)—could never have emerged in a society suppressed by a controlling regime. There, the people would not be free to play, to express themselves, to think originally and without constraints. Indeed, the "Greek spirit" complemented the Greek way of government, for "a high-spirited people full of physical vigor do not obey easily." "Authoritarianism and submissiveness" had no chance for survival in Greek life (Hamilton, 35).

8. Commentary:

The rise of rational philosophy combined with the virtue of sport and "play" had interesting results in ancient Greece. Richard Gabriel notes that, for the first time in history, the practice of rational analysis was mapped onto the subject of war. While war did not quickly become a topic of philosophical inquiry as it did in China, each citizen had the capacity, the freedom and the interest to seek the rational explanatory reasons for warfare. Basic analysis of human nature gave reasons for war which every citizen could understand and would be willing to fight for. For the first time in history, men fought for ideas. As Gabriel continues, "the idea that men fought for ideas was in itself a new idea, a powerful psychological engine that has driven men over the centuries to regard war as worthy of greatness" (Culture 87). So, while the socio-political situation crafted the particular character and form of warfare in ancient Greece, the "engine" of individualism

and of the call to rational thought was woven through that warfare character, supporting it and adding to it new social and cultural meanings.

I noted above that these 'cultural factors' emerge through the existing stratum of warfare character and attach cultural meanings to that which is entirely socio-political in nature. This happens naturally after a given warfare form (or any socio-political institution) has been instantiated within a society because that new form becomes a social norm. Warfare, or any instrument of the state, can become socially normative only if it becomes a part of culture, and only if it can appear to the members of that cultural tradition to be explainable wholly in terms of culture factors. In this way, cultural factors may serve to trick us into thinking that they alone are the sole explanations for the existence and character of the particular form of warfare in question.

Warfare analysts have fallen into this trap from time to time. I mentioned Hanson above. Hanson realizes that Greek warfare did become socially normative: "all men were initiates in that most awful of the many rituals in their culture" (Western 220). Yet, at times Hanson seems to carry this observation to an illogical conclusion, which can be summarized as 'Greek warfare was an expression of Greek culture.' He leans towards the conclusion that the Greeks fought the way they did because cultural factors such as honor, bravery, and individualism dictated certain warfare patterns and forms. Hanson's flawed logic, the result of the "tyranny of cultural explanations," is tempered by moments of clarity when he appears to stumble unwittingly on the correct explanation for the character of Greek warfare: "the classical Greeks saw their infantry fighting as economical and practical" (Western 221). This clarity, however, is wasted when he fails

to explain that Greek warfare was economical and practical only because their socio-political situation allowed them few other options.

Other scholars have succumbed to the "tyranny of cultural explanations." There is much interest in the relationship between sport (especially combat sport) and warfare. Could the latter be an outgrowth of the former cultural factor? Martin van Crevald suggests this very notion. "War," he remarks, "is the continuation not of politics but of sport" (191). He debunks the idea that political necessity motivates warfare, suggesting that the Clausewitzian notion of war as an "extension of politics" is a masque for the real reasons men engage in warfare:

> ...while war's usefulness as a servant of power interest and profit may be questioned, the inherent fascination it has held for men at all times and places is a matter of historical fact. When all is said and done, the only way to account for this fascination is to regard war as the game with the highest stakes of all. (218)

Van Crevald may not be wrong when he suggests that war is "grand theater" and has the ability to "entertain, inspire, and fascinate" man, if only because of man's inexplicable fear of and fascination with death and things macabre. But, can this fascination really be the dominant explanatory factor for the existence of warfare? Probably not. Even van Crevald admits that politics and war are never disassociated.[7]

If van Crevald's theory were true, the easiest test case to prove it should be ancient Greece, since no state—no "cold monster"—forced upon its citizens the burden of warfare—the Greek citizens took up the burden themselves. Also, at first glance, there

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[7] Van Crevald never denies the necessary association of war and politics. He only questions war's effectiveness as a tool of politics. Michael Handel, in *Masters of War*, notes, against van Crevald's argument, that sports are not necessarily apolitical—sports can involve politics or even be dominated by politics!"—Handel, note 40, p. 258.

seems to be a close relationship between the Greek spirit of competition in sports and Greek warfare. Yet, the evidence, which I will present below, shows that the cultural factors related to sports (especially combat sports), like competition and physicality and honor, attached themselves to the phalanx form after phalanx warfare had already been instantiated. These cultural factors are secondary elements, and do not have any causal effect on why or how war is fought. So van Crevald's thesis does not hold up even in this easiest of tests. His theory is flawed.

Michael Poliakoff, in his *Combat Sports in the Ancient World*, asks the question "to what extent did...combative games figure in [the] military thinking [of the ancient Greeks]?" He discovers that the relationship between war and sport in ancient Greece and in general is not an interdependent one. Any similarities or apparent causal links are coincidental. He supports this claim by noting that while the Greeks placed great value on sporting competition, other military societies, including the Romans, did not. The Romans "despised the Greeks for their games." There was never any necessary connection between sport and war. Much of the Greek literature evidence supports this. For example, Xenophon, the great General, wrote frequently of the "need for good conditioning," but never prescribed sport competition as a training mechanism. Indeed, it was Xenophon who complained that "the boxer Boiskos was an unreliable soldier (Poliakoff, 100). It is also known that Plato, Socrates and Alexander the Great all had little respect for athletic competitions and saw little utility in them. And Sparta, the most bellicose city-state of ancient Greece, was disaffected with sport. Tyrtaios, the seventh century Spartan poet reflects this disaffection: "I would not...praise a man for skill in running and wrestling. For a man is not good in warfare unless he dares look upon

bloody slaughter" (Poliakoff, 101). These pieces of evidence demonstrate a clear disconnection between sport and war in Greek society.

What about the Greek writers who did draw a connection between sport and war? Ancient Greece was, after all, an agonistic society, devoted beyond others to the exaltation of sport and competition, and especially fond of combative competition. In Lucian's *Anacharis*, Solon of Athens reports that the youth are trained in sport "not only for the sake of the contests so that they may be able to take the prizes...but to obtain something greater for the whole city. For a certain other contest lies before all the good citizens" (Poliakoff, 96). Solon is of course referring to the contest of phalanx battle. Similarly, Plutarch remarked of the athletic events referenced in Homer, that "all these activities are imitations and exercises of war" (Poliakoff, 97). Other examples abound, but this evidence is not destructive to the thesis that the socio-political situation shapes warfare character, while cultural factors emerge through and attach new meanings to that form of warfare. The agonistic exaltation of competition, especially individual competitive events, emerged with the rise of the individual. If nothing else, it helped stabilize the phalanx form of warfare and make it an acceptable institution. When the phalanx form had been instantiated as the most efficient defensive mechanism as a result of the socio-political situation, men had to make the obvious connection between phalanx warfare and the existing notions of honor and exaltation associated with combative sports. Not to do so would have been ludicrous. No man of Greece was a pawn of the state. To ensure this, personal reasons for participating in war had to be created on top of the original reason—political necessity vis-à-vis robust militant competition.

Later, I will show that the tendency to map personal meanings for warfare onto already established warfare forms is not just an ancient Greek phenomenon. In fact, the ancient Chinese did the same thing in a very different way. The ancient Chinese people *were* pawns of the state. Philosophical traditions like Taoism and Legalism emerged to teach the people ways of peacefully submitting to the will of the state, that "cold monster" who sends men to their deaths. Submission and obedience, rather than individualism and heroism became virtuous for the people of ancient China.

B. ANCIENT CHINA (CIRCA 722 – 221 B.C.)[8]

Unlike ancient Greece, the story of the golden age of ancient Chinese civilization is not one of something arising from nothing. The ancient Chinese golden age, an age of "a hundred flowers blossoming and a hundred schools of thought contending" (Tien, 25), came to fruition during the Chunqui (Spring and Autumn period, 722-481 B.C.) and Zhanguo (Warring States period, 481-221 B.C.) periods, following hard upon the long period of peace and prosperity brought by the Western Zhou dynasty. The golden age periods in question were outgrowths of that dynasty, and so the socio-political systems that emerged were based on and included vestiges of this earlier period of stability. This is an important difference from the Greek system, which was built entirely from scratch. The key difference can be summarized in the following way. In Greece, scattered Dark Age settlements gave rise to small isolated towns, which eventually developed into autonomous city-states. The small and the many were built from the bottom up. A reverse process can be seen occurring in ancient China. A single political entity burst and

[8] The major sources for this section, unless otherwise noted, include: Hsu, Lewis, Gernet, Meskill, and Tien.

scattered many small feudal kingdoms, tiny copies of itself, which eventually gained more and more autonomy—if they were not first expunged by competing kingdoms. A top down process occured.

The socio-political implications that follow from this simple disparity are immense. With no model and no guidance for building society, the onus was on the individuals of ancient Greece to design society the way they saw fit. The individual flourished and teamed with his fellow citizens to become the assembly, the political dynamo of the city-state. The feudal kingdoms born of the Western Zhou in ancient China were pre-designed templates, with all political machinery pre-positioned within them. Early Chinese feudalism was based on the supremacy of the feudal lord and the obedience of the citizens. This foundational political model served as the template for the states of golden age China. With increased autonomy, feudal lords became monarchs, and the peasants became servants of the state. The individual never had the opportunity to rise—he was suppressed from the beginning.

The social and political patterns of change that occurred throughout the history of ancient Greece took the form of a game in which each citizen played a key role. The responsibility of shaping and directing the outcome of the game was shared by all. The socio-political story of China was one in which a few key players controlled the game. The rest were not players, but game pieces. With all state power resting in the hands of state monarchs, a great game of strategy took place. The monarchs controlled the people, and thus had virtually unlimited resources to wage war with. Warfare options and strategies were limited mostly by the natural limits of creative and intellectual capacities of the monarch-strategists. Unlike the Greeks whose warfare options were constrained

by the "tyranny of *demokratia*," the Chinese monarchs could design their armies according to any operational concepts they chose to develop. While Greek warfare was limited to a contest of physical force and strength, Chinese warfare was fought and won in the domain of the intellect.

Certain authors have attempted to draw linkages between the socio-political systems, the dominance of intellection, and the particular forms of warfare developed by the ancient Chinese. Chen-Ya Tien notes correctly that the tumultuous periods of Chunqui and Zhanguo saw the creation of a coherent military tradition and philosophy, which not only was never surpassed by future military thought, but still forms the basis for much of present day Eastern, and particularly Chinese, military thought and doctrine. He also correctly assesses the reason for this situation to be the "socio-political background" of the Chunqui and Zhanguo periods. However, he fails to give a complete picture of how the socio-political machinery affected the military systems and traditions developed. He suggests that the main cause for both the rapid political changes and the changes in military affairs was the loosening of governmental control over the peoples' freedoms to speak and think. He claims that while feudal lords were occupied with power struggles, "government control over ideological matters was lost, academic activities were completely liberated from government censorship." The people, he claims, had freedom to move between states and speak their ideas freely. According to Tien, this explains the emergence of the "hundred schools of thought contending" that developed. This is true to an extent, but it fails to capture the true reasons for the particular forms of warfare developed as well as the whole truth of the situation. Indeed, philosophical thought flourished during this time, and warfare and strategy were often

topics of philosophical inquiry. Yet, the reasons for this surge in thought activity had more to do with the design of the governments and the control they exerted over their people than with the loosening of government control. Most of the philosophizing and strategizing was done by government officials, especially the new class of *Shi*, a group of educated nobility, as well as the generals. Intellectual resources became just as important as material and human resources in the Chinese warfare game.

I will consider the socio-political history of golden age ancient China, giving special attention to factors which served to place the locus of political power in the hands of state leaders, which in turn allowed Chinese warfare to develop in the way it did, with few constraints.

1. Phase I: Differentiation—Spring and Autumn (Chunqui) Period (722 – 481 B.C.)

Under the Western Zhou dynasty, peace and prosperity reigned. This ended in 770 B.C. following a court intrigue and a set of barbarian attacks on the capital. According to legend, King Yu, the last ruler of the Eastern Zhou, expunged the crown prince, his son, in favor of the child of his concubine. The queen's father, a powerful lord under Yu, rallied a nomadic tribe of barbarians to ransack the capital, forcing the court to flee East and establish a new capital in Lo, near modern Loyang. This marked the beginning of the Eastern Zhou, the first half of which has been named the Chunqui ("Spring and Autumn") period after one of the earliest historical works, the *Spring and Autumn Annals*, a chronological account of the years from 722 to 481 B.C. (Franz, 37).

The Western Zhou had been a feudal system where the king allotted small fiefdoms to local rulers. The moving of the capital from West to East marked a

significant decline in the central authority of Zhou court, a trend which continued through the Chunqui to meet final dissolution during the early Zhanguo. The local vassals in charge of fiefdoms were able to gain power and become autonomous ruling lords over their fiefdoms. Quickly, these autonomous fiefdoms took on the characteristics of beginning states. 15 major states existed, embedded within a total web of 148 states. Still claiming to be members of the Zhou feudal system, these virtually autonomous states were free to challenge smaller fiefdoms for their land and peasant workers, thereby increasing their level of success in the feudal system. The first two centuries of the Spring and Autumn period was thus a tumultuous time for the already declining Zhou court, for feudalism, and for the small developing states. State boundaries and the feudal system changed drastically and often as larger states absorbed smaller and weaker states. There was constant militant competition between these early states, spurred by the feudal system, where increased property and workers equaled increased success and wealth for the lords.

By the sixth century, feudalism had collapsed, and the original 15 major states had been consolidated into 4, buffered still by a large number of smaller states. State administration changed drastically from the original feudal structure. Originally, the feudal garrison states consisted of a small capital city ("guo") and some surrounding towns ("ye")—somewhat similar in size and structure to early Greek city-states. The guo ren were the "people of the state"—the nobles in charge of the fiefdom. The ye ren were the "people of the fields"—the peasants and barbarian groups who worked for the feudal lords. The loose control that the nobles of the vassal states had over state resources was insufficient vis-à-vis the new trend of intense competition arising as feudalism declined.

As states were absorbed, state rulers began to integrate guo and ye resources. The state of Jin, in 633 B.C., was the first to employ the ye ren in standing armies. The other states soon followed suit. This trend of imposing both military duty and taxes on the local peasants favored the larger, more populated periphery states. These states, with their massive standing armies, began to outweigh the central states. From the original fifteen, four states emerged in the sixth century: Jin, Chu, Qi, and Qin. On the brink of the Warring States period in the fifth century, Jin would break in three to form Hann, Zhao, and Wei. These three, plus the three non-Jin states above, plus the small and remote state of Yan would make up the seven major states of the Warring States period.

The key to the success of the larger states was their massive standing armies. They were simply able to overwhelm smaller and less populated garrison states. The strong states of the Spring and Autumn were able to mobilize guo and ye resources quickly and efficiently because all of state power rested with one individual, the feudal lord. These lords consolidated their power by introducing new government apparatus. Because of population increases from small state absorption, stronger states reorganized and differentiated their societies and governments. Rulers consolidated their power by instantiating rigid government hierarchies. Territory was divided into sectors headed by local administrative units. These were administered by state appointed stewards and sheriffs. Since all wealth was controlled and distributed through political channels, state leaders maintained strong holds over their dominions. The ye ren peasants, who made up the majority of the states' populations, were at the mercy of state authority. The feudal system and the later consolidation and increase of government power gave them little opportunity to do anything besides tend to their farms. With the collapse of feudalism,

social differentiation increased. Merchants appeared, as well as soldiers in the new standing armies. The control by the government over wealth and resources increased to protect against uprisings.

The Spring and Autumn period set the stage for the development of strong centralized governments that would field advanced militaries in the highly competitive Warring States period to follow. Lessons provided from the early consolidation techniques of Spring and Autumn rulers were followed and expounded upon by the powerful rulers of Zhanguo states. In fact, the *Spring and Autumn Annals*, from which the period gets its name, is not only a history of the period, but a treatise on the philosophical and practical aspects of early Chinese state building. Before its completion in the third century, the manuscript was used as a training tool by nobles of the Zhanguo state of Qin to teach the child king Zheng the principles of state rulership. This powerful treatise had an enormous impact on the young king, who later initiated nine years of fervent warfare resulting in the first unification of China under the Qin dynasty, and implemented many of the state building and power consolidation principles discussed in the treatise (Sellman).

Because it was a historical document as well as a political treatise, the *Spring and Autumn Annals* can offer insight into how states during this period might have consolidated power. The annals present what one author has calls a "spiral model of time," meaning that the dynastic cycle is not a closed circle, but a progressive event based on cyclical patterns. In this way, the eventual unification following the Warring States period was prophesized by the annals, which suggest that periods of peace and prosperity must follow periods of chaos (Sellman). Sellmann suggests that the annals

proffer an "organic instrumental approach to justifying the origin and function of the state." They are 'organic' in that they ground the formation of the state in the understanding that "people naturally gather in groups for their own protection and fulfillment." They are 'instrumental' in the sense that they suggest that the people's desires should be manipulated through rewards and punishments, and that a competitive spirit should be created to ensure the fulfillment of the peoples' desires (Sellman). These notions about kingship are only compatible with situations where a supreme ruler has an extraordinary amount of power over the people. By fulfilling the desires of the people, the king can maintain supreme authority. The desires of the masses can be fulfilled by keeping a well-ordered state, and by encouraging the masses to compete for employment. This will stimulate the economy by motivating the people to work harder and to desire more. The annals suggest that the political structure in question, the monarchy, has its foundation in the "cosmic forces of heaven and earth." The people shared in this understanding, and were unlikely to rebel against their place in society (Sellman).

Further strengthening of the courts was supplied by an intellectual revolution. In the sixth century, about the same time Thales was making the first rational utterances of the new Greek philosophy, Chinese thought was making a bold shift from the mythos-based thinking of the Western Zhou—based on astrology and ancestor veneration—to rationality. In 639 B.C. the chief minister of Lu abolished the practice of punishing shaman who had failed to provoke rain during drought, suggesting it would be more effective to provide people with relief and to enhance farming. At the same time, a minister of Zheng was giving "rational explanations of death and sickness that rejected

old superstitions of ghosts, curses, and destiny" (Hsu, 584). The rise of rationalism was to forever change the Chinese outlook

While rationalism was becoming an acceptable explanatory mechanism, a deeper intellectual revolution was brewing, and it was led and fostered by the state. The class of *Shi*, who in early Chunqui society were the lowest class of aristocrats, often serving as itinerant soldiers, were now boosted to high professional positions within the state. They were trained in ritual, music, archery, charioteering, writing, and mathematics. They served the ruler (sometimes directly) as both "robust warriors" and "gentlemen with good manners and minds" (Hsu, 583). Confucius and several of his disciples later held these positions. These new "persons of excellence," as the title *Shi* came to mean, were intent on developing and disseminating new ideas and ways of thinking. They were very much responsible for thrusting the Chinese world into a Golden Age. Interestingly, this revolution in thought and philosophy did not serve to strengthen the wills of the powerless people. It did quite the opposite. Sponsored by the courts, these new thinking patterns and philosophies helped to "fulfill the desires of the people" and maintain the stability of the all-powerful leadership. The people were more at the mercy of their governments than ever before. Only now, there were philosophical reasons for the peoples' repression.

2. Commentary:

While the rise of the Greek city-states saw the parallel rise of the individual, the rise of the Chinese monarchical states was coupled with the lowering and the suppression of the individual. As states grew in population, size, and maturity, power continued to be squeezed out of the population and put in the hands of a single ruler. By the end of the

Chunqui period, the people were obedient pawns of the state. This is completely antithetical to the situation in ancient Greece with regard to the control of power. The locus of political power for the states in Chunqui and Zhanguo China was thrust violently to the extreme side of the monarchy, and specifically, the monarch himself. The monarchy thus had abundant power and options for resource mobilization, organization, and employment for war.

In Greece, the phalanx form developed around 700 B.C. and changed little in the two centuries following. The situation in China was different. Infantry armies consisting of local populous and peasants (ye ren) arose in the seventh century, but no set pattern for their organization and employment was instantiated. Many patterns and forms were developed, and these were constantly changing and being innovated. The fixed pattern of the Greek phalanx had no static counterpart in ancient China. Why is this? China constantly innovated its military patterns because states were involved in intensive military competition. The city-states of Greece were also under intense military competition, but the options of the city-states were so heavily constrained that innovation and improvement of the phalanx form was simply not an option. Chinese states' options were not so limited. Chinese states could easily field standing armies and train them appropriately. They could sustain long and distant field campaigns. They could mobilize the best weapons quickly and efficiently. They could coordinate their armies to involve infantry, special forces, chariots, archers, and other specialists. They could set up command and control elements and design the rank structure to allow for complex strategic and tactical maneuvers. The options were so many that the real competition became a game of innovation. Strategic thinking became the most important weapon.

Winning involved knowing what the enemy would do, finding his weakness, and responding to it in an innovative and strategic way. The minds of the generals became the domain of warfare.

When abundant options exist for the mobilization, organization, and employment of resources, selecting the most efficient of these becomes more complicated. For the Greeks, the efficiency criterion was simple: the more efficient warfare form will be that which involves the most coordination. For the Chinese states with abundant development options, other factors participated in the efficiency criteria. Certainly greater coordination would be favorable. But now, several different organizational patterns might exist, all with equivalent coordination and command and control. The most efficient of these depends on how such organizational patterns are ultimately employed, as well as the organization and employment of the enemy. In this game of higher strategy, much depends on the way the enemy organizes and employs forces. The goal for a state becomes responding to the weaknesses of the enemy. That state's efficiency depends on how it will accomplish this. The Greeks rarely had to make such considerations—they fought against fixed forms. When the warfare patterns are changeable, the game becomes infinitely more complex. This is perhaps why so much emphasis was placed on the intellectual aspects of warfare in ancient China. Warfare became a contest of intellection rather than physicality. Victory smiled on the side that could out-think the enemy.

3. Phase II: Chaos—Warring States (Zhanguo) Period (481 – 221 B.C.)

The transition from the Chunqui period to the Zhanguo period followed a natural progression, tempered by the recent intellectual revolution. Other changes followed. States became more powerful and more populated as the external borders of China proper were continuously pushed outwards. The political reforms and consolidation efforts begun in the Chunqui period continued. Warfare became suddenly more elaborate and more regular. The Chunqui was marked mostly by internal state efforts to consolidate power, and somewhat by interstate warfare. By the Zhanguo, the major states had mastered the art of power consolidation. They now turned their focus outwards towards the defense and conquest of neighboring states.

The first major trend we see during this period is the growth of the mass peasant armies. All states during this time imposed universal military service on their peasant population. The armies became so large that new needs arose. The states began to differentiate their armies in role and rank. Instead of just infantry, armies consisted of charioteers, cavalry, archers, and other specialists. Maneuvers and formations became increasingly clever and complex. Because the rulers had supreme control over all state resources, long campaigns were possible—logistics management was not a overbearing problem. The states found that they needed strong generals and military specialists to train and lead these mass armies. Also, the needs of diplomatic maneuver produced theorists of stratagem and persuasion who developed state mechanisms for interstate relations. For this was a time of shifting alliances as well as constant warfare.

The changes in government can be demonstrated by the four new defining roles of the state that emerged: the reforming minister, the military commander, the persuader/diplomat, and the scholar. All four were under the direct charge of the ruler.

Thus, the rulers not only had supreme control over human, material, and military resources, but over ideational resources as well.

Rulers began to use other mechanisms to consolidate their power. In the late sixth century, using mechanisms similar to modern day coup-proofing techniques, the Tian noble lineage gained power over Qi by destroying rival lineages, by surrounding itself with fugitives and refugees in order to expand its entourage, and by securing the support of the populace via "conspicuous philanthropic activities" (Lewis, 599). Other states began granting private land shares in exchange for taxes to stimulate economic growth and to "fulfill the desires of the people" and "stimulate competition among the people" as the *Spring and Autumn Annals* suggest.

Terminology changes began to couple the robust changes in state structure. As a final motion to break from the old feudal tradition, state rulers began changing their titles officially to "king." By 323 B.C., the rulers of all the major states had donned this title, once reserved only for the Zhou ruler, the "son of heaven," who was supposedly granted a divine mandate to rule the empire. This change, which marked the culmination of power concentration, occurred in the tradition of the *Spring and Autumn Annals*' account of state-building theory, which suggests that states are natural outgrowths of the processes of heaven and earth, and that the ruler of a state rules by a mandate from heaven.

The new "kings" acted quickly to employ loyal servants and to minimize the possibility of these servants taking independent action. This was the key to the stability of their regimes. If the state officials could be controlled, the people would have neither the means nor need to usurp the power of the throne. Extensive rules were developed for

appointment to state offices, making the process competitive and bureaucratic. Extensive legal codes were developed based on rewards for meritorious service and severe penalties for minor offenses. Legalism, a doctrine which became prominent in later Chinese societies, was based on these mechanisms of rewards and punishments. Agriculture reforms were also introduced. Agriculture, which "provisioned the army and provided the economic foundations of the state," was encouraged while interstate trade, which "proved lass amiable to taxation," was discouraged (Lewis, 611). Also, for the first time, populations were being registered to ensure that everyone would comply with the requirements of taxation and military service.

The states of the Warring States period were war machines, designed from the top down to achieve two interrelated goals: consolidation of the throne's power, and political and military dominance in the multi-state world of Zhanguo China. As the states transformed into powerful monarchies, warfare changed accordingly. War became an "industry," which no longer "aimed at the correction of the guilty, but at the destruction of the enemy" (Granet, 32). The populous was the tool of the state. As objects of control and manipulation, the people were mobilized, organized, and employed by the leaders swiftly and easily as if they were material resources. The people served the regimes as the pawns of battle not out of duty, or a sense of honor, or a love for the warring arts, but in response to the ubiquitous fear of severe punishment, which must have seemed far worse than the inevitable slaughter that awaited them in battle.

4. Commentary:

Two types of changes occur in the Warring States period: changes in power consolidation techniques and changes in warfare. The former allowed for the latter. The

extremity and completeness of the power consolidation by the states of ancient China is certainly unique. The monarchies of all the states were not only able to sufficiently suppress the people, but were able to make the people satisfied with such a situation. This combination gave the governments carte blanche on military development. Their manpower resources for mobilizing men and weapons and sustaining logistics efforts were limited only by their populations!

The goal of the states of China in developing larger and increasingly complex standing armies was not necessarily conquest, but defense and hegemony. While this was sometimes achieved via diplomatic avenues, warfare was a regular practice. So armies continued to develop rapidly during the Zhanguo period. Now, since centralized monarchies controlled all the political power and had very few limits on military development, monarchies could design their militaries based on predetermined concepts of operations. Warfare theories were in full bloom at this time to provide monarchies and generals with the intellectual capital needed to develop winning concepts of operations. Simple concepts, like the value and importance of numerical superiority, caused a great increase in the size of armies during the Zhanguo period. Other more strategic and complex concepts, like "attacking the enemy's plans," or various training and command and control concepts, helped shape Zhanguo armies accordingly. The trend was for armies to undergo increases in size, complexity, role differentiation, and maneuverability. The generals also became strategically smarter. They were given the freedom and incentive to be creative and innovative. Military strategy developed rapidly.

In games of high strategy, which become more and more dependent on what has been called "relational maneuver" (Luttwak, 93-108)[9]—responding accordingly to organizational and operational weaknesses of the enemy—flexibility and constant innovation become normative. Edward Luttwak notes that one of the consequences that may follow from relational maneuver is that the results may be "disproportionately greater than the resources applied to the effort" (94). In ancient China, the constant militant competition placed a market incentive on this sort of concept of operations that would allow for increased success. Concepts akin to relational maneuver became normative. Sun-Tzu's treatise champions these concepts: "when I have won a victory I do not repeat my tactics but respond to circumstances in an infinite variety of ways... for just as flowing water avoids the heights and hastens to the lowlands, so an army avoids strength and strikes weakness" (Sun-Tzu, Griffith 100-101). The army that failed to innovate and be flexible, that failed to understand and employ concepts of relational maneuver and similar operational concepts would certainly meet with destruction. The Greeks were exempt from this sort of warfare. Their limitations were such that physicality became the dominant decider of victory or defeat. Their warfare remained static and small, ultimately constrained by the particular socio-political environment. Not so in China. Intellection became the decider of victory. Since the contest was one of concepts of operations, nothing could remain static. Nothing could remain simple.

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[9] Luttwak defines relational maneuver: "Instead of seeking out the enemy's concentration of strength, since that is where the targets are to be found in bulk, the starting point of relational maneuver is the avoidance of the enemy's strengths, followed by the application of some selective superiority against presumed enemy weaknesses, physical or psychological, technical or organizational."

5. Cultural Factors

The notion that great works of thought and culture often arise out of periods of great chaos and confusion would be in alignment with most Eastern philosophical principles as well as with pre-Socratic and especially Heraclitian philosophical tenets—"the things that exist are brought into harmony by the clash of opposing currents," remarks Heraclitus. The fact that various "contending schools of thought" emerged from the militant chaos in both Greece and China is not surprising. Often, political chaos and instability will fuel great leaps in intellectual activity. In Greece, philosophy emerged as a result of the individual's freedom to think freely, beyond the scope of religion and occult. The individual's central role in the arena of social and political change encouraged him to question and to develop rational theories about his universe. So philosophy grew symbiotically with the growth of the state. This phenomenon served to strengthen the role of the individual, making him the decider and ruler of his own destiny and the political destiny of his state. In China, the people were repressed and beset by interstate violence. Furthermore, the all-powerful state controlled even the intellectual resources. So philosophy developed either as a byproduct of the ideational needs of the state, or, in some cases, in response to the un-ideal situation of the people. In either case, it served to further solidify the power of the monarchy, and serve the ideational needs of the monarchy.

Confucianism and Legalism were products of state apparatus. Confucius rose to the position of *Shi* in the state of Lu, and served also as a private teacher around the beginning of the fifth century. The *Analects*, a collection of his teachings, present a philosophy of proper behavior for the noble man, encouraging personal integrity and

loyalty to the state. In the work are embedded many ideas about the proper conduct of government, and the proper conduct of officials supporting government, all of which support rather than undermine unchecked monarchial power.

Legalism, emerging about the same time, was a political philosophy, which developed from an amalgamation of thought and writings from state sponsored thinkers such as Han Fei Tzu and Shang Yang. The aim of legalism was to prevent the subversion of state power by holding everyone, no matter what his position, accountable before the law. Rewards were offered for meritorious service, but severe punishments were given even for minor infractions. Thus, amidst the chaos of constant interstate war, order could be established through *fa*, a "system of law and methods of government" (Vervoorn, 306).

Taoism developed in a different way. Developed by sage-peasants such as Chuang-Tzu and the apocryphal Lao-Tzu in response to the surrounding strife and conflict, Taoism promised the people ways to make the everyday chaotic world bearable. Order in the universe could thus be established through *tao*, the Way of Heaven or Nature. Often misinterpreted, Taoism proffers a very rational view of the universe; and rather than promoting rebellion by the people against oppressive regimes, it teaches the people how to live in harmony with their rulers.

Aat Vervoorn notes that Taoism and Legalism have important similarities with implications for monarchial control of political power. Most importantly, both seek a foundation for "order which lies beyond personal judgment," and, related to that, both share the belief that the individual is the "root of disorder" (309). The implications for state control of political power are obvious. Even though the two schools of thought

originated from opposite positions of society, one from government apparatus and one from pastoral sages in response to such apparatus, they served the same political end. They taught the people that suppression by the government was tolerable and allowable, and, in doing so, further strengthened the power a regime had to suppress and manipulate its people.

Most of the ideational needs of the state related either to political stability and rulership or to strategy and warfare. So, many treatises on strategy and diplomacy emerged. The most impressive of these is Sun-Tzu's *Art of War*, believed to be completed in the fifth century. These "military philosophies," their relation to the other dominant philosophies of ancient China, and their role in shaping the warfare character of ancient China will be discussed in a later chapter.

6. Commentary:

As noted earlier, cultural factors do play a role, however secondary, in the general model presented in this study. Specifically, they emerge through the existing stratum of warfare character. They have a tendency of attaching new meanings to things explainable via socio-political factors. This happened in Greece as phalanx warfare became seen as a vehicle for the individual to test his mettle (and metal), and to gain honor through bravery and audacity. In China, the emergence of cultural factors in the realms of warfare had a different effect, fitting with the very different socio-political situation there. Taoism taught the people how to be sages, and the virtues of humbling the self before the state. "Do your work but set no store by it," and "practice non-ado" are tenets of the *Tao Te Ching*. The people, motivated positively by the hope promised in Taoism, and negatively by notions of fear and by duty taught in Legalism and

Confucianism respectively, were obliged to lower themselves before the state. In doing so, they gave permission to that "cold monster" to treat them as resources to be used for political ends. It was seen as virtuous to practice the ways of the gentleman or of the sage, to kowtow (metaphorically, and perhaps literally as well) to the monarchy, to do work and to set no store by it. All of this equaled the suppression of the individual and the increase of monarchial power.

Interestingly, both the Greek and Chinese philosophies, which developed during this time, were based on rational thought and observation of the universe. Yet, different conclusions were certainly reached by these two rational approaches, perhaps because the "universes" under inspection were so drastically different. This is interesting. The drastically different conclusions met by two rational approaches supports the notion that cultural elements, including thought patterns and philosophies, indeed emerge through and react to existing socio-political institutions. We might say that rationality itself, which is nothing more than a pattern of thinking, is "bounded" by social and political environment constraints. These notions serve to further support the main thesis of this study that warfare character is shaped by socio-political rather than cultural factors.

More can be said about these cultural factors, especially the philosophies, in both Greece and China. Many scholars draw a close relation between Chinese philosophy, especially Taoism, and Chinese warfare character. This is not surprising. Chinese warfare was free to develop based on predetermined concepts of operations, which are wholly ideational. There is no doubt that trends in philosophical thought had some affect on military thought paradigms. For the most part, this never occurred in ancient Greece, probably because military activity was wholly removed from the realms of intellection.

Military forms were based on physicality in Greece, and never became a topic of philosophical inquiry as they did in China. These relationships will be developed in greater detail in a subsequent chapter.

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IV. ORGANIZING TO OPERATE

In an ideal system of warfare, the strategic process is as follows: development of a concept of operations, mobilization of resources, organization of those resources, and finally, employment of those resources. The latter three, in this ideal system, are based on the former, the schema of the concept of operations. The ideal system is ideal insofar as it posits no constraints on a state's ability to perform the latter three steps—infinite options exist. Of course, this is never the case, so in reality some combination of a concept of operations and socio-political constraints serve to determine how the latter three steps are carried out. As already noted, Greek warfare was severely constrained by its socio-political situation. Because of these robust constraints, few options existed. There was little opportunity for any operational concept to play a defining role in determining the development of a warfare system—the phalanx system was thus determined almost entirely by socio-political constraints.

China's socio-political situation allowed its large states many more options for warfare development. The intense militant competition in ancient China placed a market incentive on innovation. So strategic studies, the studies of designing innovative and superior concepts of operations, became commonplace. Chinese state strategists and theorists developed rich and innovative operational concepts and strategies. These states were thus able to develop and employ militaries based largely on these concepts. In this respect, China was much closer to an ideal type of warfare than Greece.

The comparison below looks at three factors in the military mobilization and organization processes: (1) arms and equipment, (2) force structure, and (3) command, control, and communications (C3). Investigation of the first factor, armaments, will show that while some similarities existed between Greek and Chinese infantry weapons, China was able to use a much wider array of weapons—the Greek socio-political situation prevented such a phenomenon in Greece. Also, it will be shown that while weapons availability served as an initial condition for both Greek and Chinese warfare development, Greek weapons systems played a much a larger role in defining the phalanx warfare form. Investigation of the second factor will demonstrate great disparity between Greek and Chinese force structures. This disparity is explainable. For the Greeks, the phalanx form was the most efficient way of coordinating untrained citizen soldiers in battle—few other reasonable options existed. The many variations in Chinese force structures resulted from the fact that such structures were topics of strategic inquiry and were based on pre-developed concepts of operations. Interestingly, a few recurring themes appear in all Chinese force structures, indicating that only a few operational concepts must have dominated Chinese strategic thinking. Investigation of the final factor of command, control, and communications (C3) will again show great disparity between Greek and Chinese cases. Again, Greek socio-political constraints eliminated the need for and the possibility of developing strong C3 elements. Greek C3 was kept as simple as possible. Conversely, the complexity, size, and maneuverability of Chinese formations and force structures demanded that robust C3 systems be integrated into the military structures. For each factor, the comparison will be given latitudinally, beginning with Greece and following with China.

A. ARMAMENT AND EQUIPMENT

1. Greece

At the heart of the debate surrounding the origins of the phalanx form, and relating directly to the fact that political power rested with the citizens of Greek poleis, is the story of Greek armament and equipment. Indeed, while the socio-political situation was ultimately responsible for shaping the phalanx form, armor served as an initial condition, partially determining how the phalanx should be organized and employed.[10] A. M. Snodgrass, who has provided the most comprehensive work on Greek armaments, makes a few important points worthy of mention here. First, the hoplite 'panoply' was not developed all at once as if "sprung... from the head of some unknown genius," but rather it was a "long drawn out, piecemeal process, which did not at first entail any radical changes in tactics" (110). Thus, the "hoplite revolution" was really an evolution, developing over the course of several generations. Second, once the key ingredients to the hoplite panoply had been introduced, they did have significant tactical implications. Snodgrass notes that one major implication was the sheer unpleasantness of engaging in offensive warfare caused by the heavy and uncomfortable armor, which ensured that "any wound [a hoplite received] was likely to be an agonizing one, not necessarily bringing a quick death" (115). Snodgrass suggests that this 'unpleasantness factor' helped drive the conditions of phalanx battle towards the tradition of the ritualistic single pitched battle as the decider of a campaign. The average agrarian citizen-hoplite would not have wanted to endure a long drawn out battle, and so they took comfort in the fact that "a single

[10] Several authors comment on this. One in particular, Arther Ferrill, is convinced that the "tactical use of the phalanx in the field was determined by its equipment" (102).

engagement usually gave a clear-cut result and ended the campaign" (115). Snodgrass' third key point relates to the importance of the role armor played in making the phalanx form a superior system, which provides an important explanation for its stasis over the centuries. Speaking of the Greek victory at Marathon, Snodgrass remarks: "the superiority of Greek equipment must have been an important factor here and elsewhere, and at time perhaps a decisive one" (Hanson, Western 55). With these points in mind, I will proceed to discuss relevant economic and mobilization factors, and point out the key details of the hoplite panoply. I will focus on a key point related to hoplite armor that Snodgrass fails to mention—the fact that in various ways, hoplite armor provided natural, built-in command and control elements that reduced the need for leadership in battle.

a. Economic Factors

Before discussing the equipment piece by piece, I will consider a few other pertinent factors particular to the hoplite panoply. It is clear that the citizen hoplites were indeed responsible for obtaining and mobilizing their own equipment. W. Kendrick Pritchett begins his four-volume study of Greek warfare by reminding the reader of this very point (3). On the subject of ancient Greek economy before the Peloponnesian War, H. Mitchell, quoted by Pritchett, notes that "the armed forces of the [city-states] were composed of citizens who provided their own equipment and maintained themselves while on active service....It was quite possible for the state to bear little or no expense" (361). Similarly, Hans Delbrück notes in his History of the Art of War, that it was not only out of personal obligation and necessity that the citizen hoplite brought his own equipment, but sometimes it was seen as a form of taxation for the citizen to pay for his own equipment (Andreades, 217). It should also be noted that the self-mobilization of

equipment was part of a larger mobilization effort. In Athens, when a battle or campaign was imminent, a list of citizens expected to participate would be posted in the marketplace (eponymoi) with orders to "come prepared with rations for three days" (Aristophanes, "Peace" 1182-1184; Pritchett, 33; Anderson, Xenophon 45). All of this makes sense in light of the particular socio-political situation in ancient Greece. Indeed, my conclusions about the Greek locus-of-political-power setting constraints on resource mobilization are in alignment with these mobilization practices. It was in fact the case that mobilization of resources was limited to the practice of publishing the general order: "bring your own provisions and armor, and make sure you show up on time at the designated place!"

b. Mobilization Factors

Since each man brought his own equipment, panoplies were often very different. At first, only the wealthy nobles could afford to buy such armor and equipment. During these early times, as J. K. Anderson notes, "the poor were not wanted; an unarmored man throwing stones or swinging a cudgel would have only a nuisance value as a skirmisher, and his presence would weaken the line of battle" ("Wars" 686). Soon after the inception of the phalanx form, however, the armor and equipment of the panoply became financially within the reach of middle class farmers, merchants and craftsmen. Anderson suggests that because of this, hoplite warfare served to partially "determine" political institutions, favoring "systems of government in which the franchise was open to the middle class" ("Wars" 686-687). I would counter this suggestion by arguing that, if any direct causal relationship existed, it would have more likely existed in the opposite direction. I suggest that democratic systems of government

began to favor massed citizen-infantry warfare where each citizen had the means to obtain and mobilize his own equipment. Regardless of which view is correct, the point to be made here is that there was no uniformity to the phalanx panoplies. Delbrück notes that some of the less wealthy, and thus more lightly armed men, would have been placed in the rear of the phalanx where they would have been useful in pushing forward or helping wounded soldiers (54). Uniformity of dress and equipment increased slightly as Greek warfare moved into the classical age. Anderson notes that only Spartans or those trained on the Spartan model came close to standardized uniforms, and not until the fifth century or later. No badges distinguishing rank were worn, save in classical Athens, where regimental commanders wore helmets with triple plumes and red or purple tunics to distinguish their official ranks. Uniforms were wholly unnecessary, since the phalanxes of Greek city-states emblazoned on their shields the letter or badge representing their city. In this way they could tell friend from foe in battle (Anderson, Xenophon 39-40).

c. Available Weapons Not Used By The Phalanx

Perhaps a discussion of available equipment that was not used will provide insight into the phalanx system. In Archaic Greece, bows, chariots, and cavalry troops were not utilized. Cavalry and chariots eventually became useful in the Classical and Hellenistic periods, after advances in command and control elements and tactics made such equipment advantageous. Most scholars suggest that bows were not used because bows and missile fire in general were considered to be mechanisms of the coward. In the Homeric tradition, only the "treacherous Pandaros" or cowardly Alexandros the archer, that "foul fighter" would use such equipment (upon being struck in the foot with one of

Alexandros' arrows, Diomedes challenged Alexandros: "If you were to make trial of me in strong combat with weapons your bow would do no good at all....this is the blank weapon of a useless man, no fighter" ("Iliad" IV: 85-140; XI: 375-390).). But Delbrück denies this, claiming "with the Greeks the bow was a traditionally respected weapon" since "the national hero, Hercules, was an archer" (55). Delbrück is probably wrong in his conclusions. Enough evidence exists to suggest that the Greeks, at least at first, associated the bow and missile warfare with cowardice. But Delbrück's mistaken conclusions about respect for the bow may have led him to the real reason that the bow was not used in Archaic Greek phalanx warfare. Since the phalanx was based on the spear and hand-to-hand combat, Delbrück suggests that "the bow was pushed into the background, since the two arms, even if not mutually exclusive, can be combined only with great difficulty" (55). This conclusion is more in line with my suggestions presented in the second chapter, that constraints set by the socio-political situation in Archaic Greece disallowed training, and therefore disallowed any possibility for combined-arms warfare.

Other available weapon systems went unused, largely for the same reasons as the bow. Anderson notes that while chariots certainly existed for use in races and sporting events, they were lightly constructed, and would have proved useless as a fighting platform against the tightly packed opponent phalanx. Cavalry were scarce too, as they could not break the concentrated phalanx force. These weapon systems would have also been subject to the combined-arms problem noted above ("Wars").

d. The Shield

This piece of equipment, the hoplon, from whence the name "hoplite" is derived, seems to have been the most important weapon of the phalanx for both its defensive uses and its facilitation of built-in phalanx command and control elements. The early shields were round concave pieces of wood some three feet in diameter, estimated to be about sixteen pounds. Later models included bronze trim around the edges to prevent splintering. Some were crafted entirely from bronze or iron, and emblazoned with the sign of the warrior's city-state. The shields had a distinctive arm and handgrips, porpax and antilabe respectively, which distributed the weight across the entire arm. Snodgrass offers a comprehensive discussion of the various characteristics of shields used in early Greek history. While he describes these simple devices in great detail, he perhaps does not say enough about the implications that these important devices had on phalanx tactics. Hanson, however, gives a concise summary of the important tactical trends arising from hoplon use. First, it should be noted that the shield was an awkward and uncomfortably heavy piece of equipment. It was most effective when held straight across the body by the left arm—a most tiresome pose. One of Aristophanes' characters jokes, in Clouds, that he saw one of the modern youths, "so feeble he let his shield drop to his haunches" ("Clouds" 987-989), insinuating that great pride was taken in the strength needed to support the shield. Body movement was heavily restricted too. If the hoplite bent down or lowered the arm the "lower rim would scrape the ground" (Hanson, Western). Balance was affected as well, and men in ranks must have depended on the close packing system of the phalanx both for balance and protection. Since the shield only effectively covered the soldier's left side, each hoplite would depend on the

closeness of the shield of the man to his right for protection. An oft-quoted passage of Thucydides demonstrates the tendency of whole armies to shift to right during battle because of individual attempts by each soldier to gain extra close coverage by the shield to his right:

> It is true of all armies that, when they are moving into action, the right wing tends to get unduly extended and each side overlaps the enemy's left with its own right. This is because fear makes every man want to do his best to find protection from his unarmed side in the shield of the man next to him on the right, thinking that the more closely the shields are locked together, the safer he will be. (V: 771)

Because the shield drove the soldiers to pack in close, questions have been raised about phalanx effectiveness. If the soldiers were too close, not only would the rightward shifting occur, but forward movement would surely be hampered. How, if too closely packed, could hoplites maneuver their offensive weapons to strike at the enemy (Hollady)? The sensible answer to this question seems to be that while the individual shield was primarily a defensive weapon, the sum of all the closely packed phalanx shields seems to have been an effective offensive mechanism, naturally forcing the soldiers to pack in tightly, and used as a means to break enemy lines via the othismos aspidon ("push of the shields"), the forward moving pressure of massed ranks.

Hanson notes that the particular shape of the shield, round and concave, seems to have been more effective as a pushing mechanism rather than a protective mechanism. At close combat, shields would often shatter from the onslaught of enemy spears and swords. Yet, when phalanxes collided, the front lines could effectively be forced into the enemy forces by the men in the rear, pushing their bodies into their shields, and thus forcing the front lines forward. Hanson makes an interesting comment

about this practice. He suggests that during those first few moments after collision, the "perception of success, of movement forward, must have been nearly as important as any actual progress ahead, since it kept men hopeful that their strenuous efforts were not wasted" (Western 173). It is certainly interesting to note the possible psychological effects of hoplite warfare on soldiers during battle. This sort of discussion is often ignored, but many of the phalanx practices make little sense if abstracted from their psychological implications.

Such psychological implications often emerge as built-in command and control elements. For instance, the psychological satisfaction derived from packing closely together for protection served as the psychological glue that bound the phalanx tightly together, allowing it to concentrate its strength at the enemy. The pushing mechanism motivated the soldiers in front to fight fiercely, since retreat was not possible—their exit was blocked! The result was a phalanx program where the use of the shield fit with the closely packed nature of phalanx battle, and served to reinforce command and control elements naturally, through psychological and physical means.

e. The Helmet

The hoplite helmet was an unwieldy piece of equipment, made of bronze, covering the head, neck, and part of the face. It weighed about five pounds and must have been incredibly uncomfortable in the Greek summer sun. Also, the lack of padding or netting often proved lethal following a direct blow to the head. Yet, not wearing the helmet would have meant certain death, so the item became a regular part of the panoply. Once again, Hanson provides some insight into how the hoplite helmet affected phalanx

warfare. Hanson notes that both hearing and sight must have been significantly impaired due to the helmet. He suggests:

> ...it would not be surprising if the simple formation and tactics of phalanx warfare....grew, at least in part, out of the lack of direct communication between soldiers and their commander; dueling, skirmishing, and hit-and-run attacks were out of the question with such headgear, and the isolation created by the helmet demanded that each individual seek close association with his peers. (Western 171)

Once again, the characteristics of the armor had tactical implications. Hoplites were forced to remain in close contact with their fellow warriors if for no other reason than to hear the commands and to understand where the enemy was and what was happening. Complex tactics—or any tactics besides the othismos—would have resulted in unbearable command and control problems, since communication was nearly impossible unless everyone was packed together.

f. Greaves and Breastplate

Greaves were thin sheets of bronze extending from the kneecap to the ankle. Scholars suspect that these were snapped on to the shin, the metal forming a clasp around the calf muscle. These helped protect the legs from downward thrusting spear attacks, for which the shield was useless. The hoplite breastplate, a bell corselet, consisted of front and back sheets of bronze connected at the shoulders. The bell shape is a result of curved flanges of metal above the hip, easing movement and protecting the stomach. Scholars estimate that the breastplate weighed about 30 to 40 pounds, about half the weight of the panoply. This important piece of protective equipment was not impenetrable though. Throughout Greek literature we hear of "spear pierced" armor, or breastplates that have shattered either from direct assault by a spear or by constant

bombardment during battle. Tyrtaios speaks of the fallen soldier with "wounds in his chest" from a spear that had "transfixed the massive guard of his shield, and gone through his breastplate as well" (Hanson, Western 82). Also, One of the most potentially hazardous problems with the body armor was that it offered no protection to the neck or groin. Once again, Tyrtaios, with graphic detail, reminds us of the horrors of war that may befall the unlucky and unprotected:

> For this is indeed disgraceful, that at the very forefront
> An older man falls and lies down in front of the younger,
> His hair white and his beard grey,
> Breathing out his last strong spirit amidst the dust,
> Holding in his hands his testicles all bloody. (Hanson, Western 212)

Other less gruesome problems with the breastplate existed. Hanson reminds that throughout the literature there is evidence that the panoply was not donned until the very last minute before the charge, which makes sense in light of the sheer weight and discomfort of the panoply. Indeed, it must have been exhausting even to march wearing the 70 to 80 pound armor system. For how long could a phalanx sustain intensive close order battle wearing these massive panoplies? Perhaps 30 minutes at most before complete exhaustion set in. Keep in mind that combat usually followed a running charge at the enemy, perhaps as long as several hundred yards. The historians often tell of battles where warriors, by the end of the battle, were completely worn out and "tired.... [from] the fighting and the thirst and the sun" (Thucydides, IV: 35). This offers some insight into the question of why entire campaigns were often decided in one short pitched battle. Above, I noted that Snodgrass had suggested that the sheer "unpleasantness" of the armor created a desire to end campaigns quickly. So, supposedly, since the horrors of warfare were coupled with the discomfort of the

panoplies, it was more convenient for hoplites to engage in battle only for a short amount of time. This sounds a bit silly to me. Perhaps Snodgrass meant something slightly different. It seems clear that necessity rather than desire dictated the length of engagements. Specifically, campaigns had to be short—after one short pitched battle, complete exhaustion would have overcome all those who had survived! The fighting had to come to an end quickly.

g. Offensive Weapons: The Spear and Short Sword

The supremacy of the Greek spear as the dominant weapon of phalanx battle demonstrates, perhaps, the desire of the Greeks to kill the enemy at close range rather than from afar with missiles, weapons of cowards. It is perhaps more than that, though. Was not the Greek spear, some six to eight feet in length and about an inch in diameter, the simplest weapon to use? The combination of simplicity and gruesome effectiveness must have made the spear the weapon of choice for untrained soldiers. No weapons training would be needed. No acumen was required to jab a six-foot spear in the general direction of the enemy. As Hanson points out, the challenge for the spear wielder was "strength rather than dexterity" (Western 84). After all, movement was greatly restricted, as was sight and hearing. The hoplite knew where the enemy was because he, and his closely packed neighbors, were running in their general direction. Upon impact, an underhand spear thrust would have been the only sensible offensive maneuver. After the collision had occurred, the soldier could switch to an overhand spear thrusting position, and continue to jab into the enemy with force rather than dexterity. Efficiency and simplicity were the keys to the phalanx form. All the pieces of the phalanx weapon system fit together with the simplistic phalanx tactics. A heavily

armored, tightly packed mass of infantrymen wielding spears would have been a terrible foe indeed.

The soldiers in the middle and rear ranks of the phalanx would hold their spears upright until they engaged the enemy. The spears of the front line soldiers would usually shatter after a few treacherous stabs and blows. These soldiers, if still alive and in fighting condition, could use pieces of the broken spear (especially the bronze tip) to continue jabbing, or could resort to use of the short sword, which was the less preferred weapon. The sword could be used to stab or to hack, but its use required freedom of movement which was usually unavailable, and also required a degree more skill, which was perhaps also often unavailable.

This survey of ancient Greek armor fails to tell the complete story. After the Persian war, in response to new threats like Persian bows and missiles, Greek phalanx tactics changed. Government control of power increased at this time because of the development of more complex bureaucratic apparatus, and thus allowed for training and the more sophisticated tactics of the Classical period. The trend in armor was toward light armored troops who had the ability to maneuver. Some combined arms systems were employed, but for the most part, the armored phalanx remained the central mechanism of Greek battle well into the Classical period. This study, however, is more interested with "the Great Age of hoplite warfare" (Hanson, Western 71), especially with regard to the heavy armor of the Archaic and early Classical phalanx.

The theme of this survey of Greek armor that is most important to the comparison at hand is the idea that the sheer simplicity and efficiency of the phalanx armor system fit exactly with the tactics and operational concepts of the phalanx. Indeed,

the combined phalanx tactics and concepts, and armor, and the socio-political elements responsible for creating them were a combined system, fitting and functioning together for specified aims. The system may have been simplistic, or immature, but the system worked. Its virtue rested not with its power or usefulness, but with the fact that all of the system elements were perfectly matched. This must occur for a warfare system to be called extraordinary. I shall demonstrate that such is not the case with the Chinese system. In all its complexity and "maturity," the armor and equipment on which it depended were not always closely aligned with its operational concepts or tactics. Perhaps we shall find that the major difference between Greek and Chinese armor and equipment is that in Greece, armor was central to organization, command and control, and phalanx tactics, while in China the role of armor was secondary. While it served the strategic combined-arms needs of the states, it was never tied directly to larger strategic concepts—it was a necessary condition to be sure, but never an organizing principle in an of itself as it was in Greece.

2. CHINA

A few glaring differences exist between ancient Chinese armor and ancient Greek armor systems. First, evidence for phalanx armor systems is abundant, from both archeological and historical sources. Because of this, the secondary literature on the topic is also abundant. This is not the case with Chinese armor. An adequate amount of archeological and historical evidence exists, but not nearly as much as the evidence for Greek armor. Little secondary work has been done on the topic. Unlike Greece, some information about ancient Chinese armor systems comes from another source besides archeological finds or historical accounts: the various military treatises of classical China.

This is helpful to understand how Chinese armor affected strategic thinking and tactical planning.

The second major difference derives from the socio-political differences evident in the two classical societies. Chinese soldiers were funded by the state. Unlike Greek hoplites, they did not buy their own equipment. Arms were supplied to them upon conscription into the mass infantry armies. For the Chinese states, this was certainly a much more efficient way of managing the mass infantry armies of conscripted peasants. Since the state monarchies had the power to arm the people, it made sense to do so. This was simply not an option in the Greek system. Since the states dispersed arms to the peasant soldiers of the standing armies, armor was standardized so that everyone of the same rank and role had the same equipment. Elaborate rank and reward systems were established, and ranks and rewards could be seen clearly on the armored uniforms of the soldiers.

The third glaring difference is one of scale. Everything relating to Chinese warfare systems was bigger when compared with classical Greece. The land was bigger; the states were bigger; the armies were, therefore, bigger. This scale difference is reflected in armor and equipment differences. Because the socio-political systems permitted it, Chinese states employed combined-arms techniques. They were able to train men to use complex equipment and weapons. They were able to coordinate combined-arms campaigns. So, instead of just a single integrated weapons system like the Greek phalanx, the Chinese states employed missiles, cavalry, chariots, tanks, siege craft, and other systems in concert with the shock weapons of the infantry. Sometimes these systems played supporting roles for the infantry, and sometimes they played more

central roles. The importance is the integration of the various weapon systems that took place. Because of the variety of weapon systems available and the integration of systems that was possible, weapons theory developed. Strategists began to think about how certain weapons could be used advantageously in certain situations. Thus, more strategic options were available. A state could design a concept of operations based on terrain, the status of the enemy, and the enemy's plans. Appropriate weapons systems could be selected accordingly. Many of the theoretical treatises on warfare from that time include sections on weapons theory designed to guide a leader's weapon selection to fit with specific warfare conditions. In Greece, the phalanx weapons system fit with only one form of warfare—phalanx battle.

In China, weapons systems served as an initial condition for warfare, but not in the same way that Greek weapons did. Perhaps one of the most poignant differences in warfare between the two societies was the "level of purity." The Greek phalanx system was truly a pure and organic system. The phalanx form depended upon an exact one-to-one fit with the phalanx armor system—there was only one way to organize and to battle, and this was directly related to the single system of weapons. The co-evolution of phalanx form and function was perfectly constrained by the socio-political situation so as to disallow any other possible phalanx forms or functions. The result was a perfectly pure and organic system. Because Chinese states had an abundance of options, due to their particular socio-political situations, the warfare systems were much more complex and varied, and thus, not nearly as pure as the simple Greek system. The available Chinese weapons systems were directly related to this complexity and lack of purity.

Chinese weapons played a lesser role in directing and determining the forms of Chinese warfare than Greek weapons played in defining Greek warfare. This factor of 'importance of the role of weapons in relation to the overall warfare forms' is reflected in the fact that a great deal of secondary literature about Greek weapons exists, while comparatively few secondary sources discuss Chinese weapons. There seems to be much more to Chinese warfare than the weapons employed. Or, perhaps, Chinese weapons simply played a less interesting role in Chinese warfare than Greek weapons played in phalanx warfare. For instance, Chinese weapons did not offer any built-in command and control advantages as in the Greek system. Nor were there any deep cultural sentiments or meanings attached to Chinese weapons. In Greece, weapons, for good or bad, had cultural connotations derived from the Homeric tradition. Chinese weapons systems, as compared with Greek weapons, were thus larger in scale (not in actual size, but in numbers and complexity), but less important in defining the form of warfare.

a. Defensive Infantry Equipment

Ancient Chinese armor was quite different than that of the Greek hoplites. For the most part, body armor consisted of rectangular leather strips tied together to form a tunic. Charioteers, who remained stationary on the chariot, wore long and cumbersome leather body armor. Infantrymen, who relied on mobility, wore lightweight leather armor to increase maneuver and combat speed. Bronze helmets, similar to hoplite helmets, were worn by infantrymen. Wooden shields, covered with bronze, and later with iron, were used by infantrymen, solely for personal defense. The light armored infantry, highly mobile and maneuverable, used these shields during close-in, one-on-one combat—unlike the Greek hoplons, they had no offensive or command and control

benefits. During the Zhanguo period, some infantrymen donned iron armor, which consisted of several iron plates sown together to form an iron tunic. However, leather body armor remained the dominant form of armor well into the Han dynasty. This shows that the Chinese were more concerned with maneuverability, and therefore utilized light armored forces, while the Greeks, lacking maneuverability, were concerned primarily with protection.

b. Offensive Infantry Equipment

The staple of Chinese infantry fighting, from the late Shang, through the Western Zhou, and well into the Chunqiu and Zhanguo periods, was the halberd. Eventually, the Chunqiu and Zhanguo halberds became quite sophisticated and elegant, consisting of a combination of a spear for thrusting and a hook for slicing, cast together in a single piece out of bronze, and later out of iron. The halberd seems to have been most useful in the earlier Chunqiu infantry armies, where maneuver was not as prevalent. During this period we can imagine the halberd being used in much the same way as the hoplite spear—as infantries crashed, a halberd might have been used to jab the opponent directly. Also, halberds were of similar length to the hoplite spear at about 9 feet long. Yet, little is written about halberd training or handling, and during the later Chunqiu period (the later sixth century), the dominance of the halberd seems to have been usurped by the bronze sword (Watson, 131-147).

The rise of the bronze infantry sword paralleled dramatic changes in warfare practices due largely to the widespread use of mass peasant armies. With increased maneuverability, infantry soldiers needed a new weapon for fast, close-in infantry combat. The bronze sword used by infantrymen usually had a blade length

slightly greater than double the length of the haft (Sawyer, Seven 371). While lengths and styles varied greatly, these swords were somewhat similar to Greek hoplite swords, which had blade lengths of around two or three feet. Their use was also similar to Greek swords. Chinese infantry swords could be used for thrusting or chopping.

Two changes to the Bronze infantry sword occurred in the early Zhanguo period. First, iron metallurgy techniques, which had already been adopted for the making of tools, were widely applied to the making of iron weapons, especially swords. Second, "short swords" were made in greater quantity. These shorter swords, with the blade not much longer than the haft, were probably reserved for cavalry. While weapons training certainly took place, little is known about exact weapons combat techniques—probably because most training seems to have been focused on large scale maneuvers and formations rather than on individual combat technique. It is likely that Chinese infantrymen sword techniques did not differ much from the unsophisticated slashing and jabbing methods used by hoplites in Greek infantry combat.

Besides these staple shock weapons, missile fire, and particularly the crossbow became quite popular in ancient China. This Chinese invention included a state of the art bronze trigger mechanism. Chinese crossbowmen would lie on their backs and apply both feet against the arc to load the bow. The Spring and Autumn Annals (Lushi chunqiu) and other sources tell of the extraordinary accuracy of the bows and precision of the trigger mechanisms. Sun Pin and other theorists discussed in some detail the ways in which crossbowmen should be employed in accordance with infantrymen. Sun Tzu used the crossbow as a metaphor, suggesting that knowledge of the crossbow had existed well before the fifth century:

> The strategic configuration of power of those that excel in warfare is sharply focused, their constraints are precise. Their strategic configuration of power (combat potential) is like a fully drawn crossbow, their constraints (timing) like the release of the trigger. (Sun-Tzu, Sawyer 63)

c. Cavalry and Chariots

Cavalry became a common feature of Chinese warfare late in the Zhanguo period, centuries after the compilation of the Sun Tzu treatise—the fact that Sun Tzu doesn't mention cavalry gives further evidence for this claim. The Tso chuan makes several references to the riding of domesticated horses in China as early as the sixth century, but does not make reference to cavalry units, which appeared later. Much debate still rages on this subject of the exact dates of the introduction of cavalry into Chinese warfare.

Once mounted soldiers became a standard of warfare, strategy and tactics changed accordingly. Cavalry had the advantages of speed, mobility, shock, and were not restricted to easy terrain like chariots were. The T'ai Kung in the Six Secret Teachings remarks on the power of cavalry compared to other military forces: "ten cavalrymen can drive off a hundred men, and a hundred cavalrymen can run off a thousand men" (Sawyer, Six 156). Interestingly, like Sun Pin, the Six Secret Teachings advocate using cavalry for supporting roles—thus, "driving men off" rather than directly confronting them. The T'ai Kung does note that, when on easy terrain, "one cavalryman is equivalent to eight infantrymen," and "ten cavalrymen are equivalent to one chariot" (Sawyer, Six 156). Yet, even when cavalry became readily available, they were restricted to supporting roles like, as Sun Pin suggests, "forcing the enemy to run off," or

"attacking provisions and supply lines," or "surprising unprepared troops" (Sun Pin, 294). The real fighting was left up to the infantry armies. Why was this the case? Perhaps the reason for this was that the sheer numbers of infantrymen made them more expendable than cavalry. Perhaps, in the minds of the strategists, cavalry were better suited to support the orthodox tactics of infantry armies with unorthodox raiding tactics, and would have been ill employed in orthodox contexts. I suggest a third possibility—perhaps Chinese warfare, much like the static forms of phalanx warfare, was somewhat path-dependent. The late introduction of cavalry, after mass infantry armies had already dominated the war fields for a few centuries, made drastic operational changes difficult, even for the leaders and strategists who prided themselves on innovation. To replace the dominance of the mass infantry with cavalry forces, or even to couple the orthodox actions of infantry with conventional cavalry forces would have made drastic organizational and operational change necessary. It was much easier and more efficient to continue of the path of mass infantry dominance while adding cavalry to the equation in supporting roles. In this way, the dominance of the infantry would not be altered.

If this was indeed the case, then Greek and Chinese warfare had at least one trend in common—path-dependence. There is evidence to support this suggestion. One of the earliest stories of how cavalry came to be introduced in China comes from the Chan-kuo Ts'e. The story shows how path-dependence and resistance to change almost prevented cavalry from being introduced at all. In 307 B.C., King Wu-ling of Chao, a frontier state that bordered the steppe, sought methods to extend his territories. He decided to form units of mounted archers. Because the traditional Chinese costume at the time—a long robe tied at the waist by a belt—was ill suited for horseback riding, many of

the king's more conservative relatives and ministers objected to his decision. To ride horseback, soldiers would have to don the outfits of their barbarian neighbors, an act which was considered to be detrimental to Chinese culture. One objector, Hung-tzu Cheng, argued that China was

> A land looked up to from afar, and a model of behavior for the barbarian. But now the king would discard all this and wear the habit of foreign regions. Let him think carefully, for he is changing the teachings of our ancients, turning from the ways of former times, going counter to the desires of his people, offending scholars, and ceasing to be part of the Middle Kingdoms. (239-242; Peers, 51-52)

King Wu-ling, being the king, did not listen to the complaints. Instead, he decided to wear the dress himself, setting the example in the midst of opposition and ridicule. He proclaimed:

> I doubt not at all the efficacy of the Hu costume, my only qualm is to hear the laughter of the empire. However, 'capers of the dissolute are pitiful to the wise and a sage bears with sympathy the laughter of fools.' If the empire goes with me there is no end to the advantages of the Hu costume; and even though all China laughs, I shall have me the land of the Hu and Chung-shan. (289)

The cavalry soon proved to be an effective and powerful military asset. The resistance to change was countered by Wu-ling's will and power to act on it, but the point of the story is to show that even in innovative China, path-dependence and resistance to change still reigned and played some role in directing the forms of warfare.

The chariot, existing before the rise of the mass infantry armies, never met with such controversy. In the Shang and early Zhou dynasties, the chariot was a symbol of nobility, wealth, and power. By the Chunqiu period, the chariot had become more functional, and various chariot battles are mentioned in the historical accounts of this time. While certainly more powerful, more agile, and stronger than the "sport-chariots"

of Greece, Chinese chariots never became the major warfighting components of Chinese armies. They were quicker than foot soldiers, but their awkward maneuverability and dependence on flat, easy terrain made them better suited for supporting roles or for command platforms. With the rise of the mass infantry armies, chariots were used even less. The expense of the equipment and the training required to drive a chariot could not compete with the efficiency of employing peasant-infantrymen in massive armies.

The interesting difference between Greek and Chinese armor is the fact that Greek armor had a significant effect on other strategic aspects of phalanx warfare, to include force structure implications, command and control implications, and communications implications. Chinese armor served no such purpose. Chinese arms and equipment were free to develop in varied directions because the political institutions not only promoted such development, but were equipped to employ varied combined arms forces. Thus, strategists had no difficulty figuring out how crossbowmen could be most efficiently employed in conjunction with infantrymen, chariots with cavalry. The Greeks had no such luxury. Their highly constrained socio-political environment ensured that the simplest arms and equipment would dominate Greek warfare for centuries. Since the political mechanisms for employing combined arms forces did not exist, equipment other than the basic hoplite armor system gained negative cultural connotations. These negative cultural connotations, which served only to masque the real reasons such equipment was not being utilized, served to further solidify the dominance of phalanx armor systems.

B. FORCE STRUCTURE

1. GREECE

Phalanx formation, as P. Cartledge insinuates, was not "graceful or imaginative" (15). It was, however, simple, functional, and best of all, perfectly nested within a system of government, armor, and operational concepts that supported it. Unlike the Chinese systems of formation, Greek warfare presented only one way to fight—a way which, as I have pointed out, was largely dictated by socio-political constraints and by the initial conditions of armor and terrain. The phalanx force structure allowed untrained citizen soldiers to self-organize and coordinate their attacks. Force structures other than the phalanx formation would have required sufficiently more coordination and command and control. These in turn would have required training, which simply was not an option for socio-political reasons.

a. A Self-Organizing, Pure System

It was relatively simple to self-organize into the phalanx form. Of course, some leadership and coordination was required—the polemarch would have to specify how many ranks and files would be employed, but generally, citizens fought next to family and tribe members as part of the same file. It was simple and it made sense. The brilliance of the phalanx formation was that the weapon systems of the hoplites served as a sort of glue, holding the formation together once battle had begun. Because of this, everyone understood both the simplicity and the necessity of the closely packed formation, making self-coordination and organization simpler still. The simplicity of form is what made it so efficient—and, strangely, so frightfully effective. When the simplicity of a warfare system equals both efficiency and effectiveness, an extraordinary

discovery has been made. The result in Greece, the phalanx, was a system so pure, there is no wonder it lasted unchanged for centuries.

The phalanx was specifically designed for flat terrain. The reason is, again, a socio-political one. City-states needed to protect their farmlands from aggressors who would trample their crops as a means of attaining political objectives (Hanson, Agriculture). These farmlands were outside of the cities, and could not be adequately guarded by walls or fortifications. Perhaps it would have seemed more reasonable if the city-states had taken efforts to guard the mountain passes from aggressors. But, as Anderson notes, such garrisons would have been useless unless kept up permanently." He then notes that "permanent frontier guards were impossible. No early city-state had the resources or the administrative organization needed to keep a strong force of regular soldiers in the field." The only other reasonable defense option was for an invading enemy to be "met in the heart of the city's territory." Complete destruction of the city was almost never a war aim (limited political aims were sought, which is why, as Hanson explains, crops were trampled, but rarely ever annihilated), and "victory in the field was usually sufficient to secure limited war aims" ("Wars" 686).

In light of this, it seems strange to me that historians and scholars, from the time of Herodotus to the present, would think that the seemingly ritualistic practice of pre-selecting a level ground location for battle was so peculiar. An oft-quoted passage from Herodotus demonstrates this historic fascination with this "oddity of the Greeks' way of making war" (Hollady, 97):

> ...these Greeks are wont to wage war against one another in a most foolish way, through sheer perversity and doltishness. For no sooner is war

> proclaimed than they search out the smoothest and fairest plain... and there they assemble and fight. (Herodotus, VII: 9)

But, this "so foolish a manner of warfare" made sense. The phalanx force structure necessitated it, for, as Cartledge admits, "on its chosen ground the phalanx could be a superior instrument to most others" (Hollady, 97; Cartledge).

b. Specific Force Structures

Little information exists about the exact force structures employed before the time of Xenophon, but scholars have extrapolated from Xenophon's work and from other evidence to deduce the probable structures. The traditional phalanx employed hoplite infantry in rank and file eight ranks deep. Because they were organized into files according to their demes (probably the easiest way to self-organize), they shared bonds of friendship and kinship with their fellow soldiers, perhaps adding both to the cohesion of the phalanx unit and the will of the men to fight and to defend their friends, brothers, and state. The phalanx is simply a line formation with a "width considerably greater than its depth" (Pritchett, 134). As armies became more tactically proficient during the Classical age, it became a strategic organizational challenge to choose a sufficient balance between width and depth based on the number of hoplites for a give battle scenario. Greater width would allow for envelopment of the opponent's army, but would sacrifice depth, which is essential for forward moving pressure and breaking of the enemy's line. While the traditional phalanx depth is considered to be eight men deep, depth and width varied greatly across city-states, engagements, and over time. Pritchett provides evidence for various widths and depths in different battles in tablature form in The Greek State at War (134-154). Delbrück begins his study with an investigation of the actual strengths of the

phalanxes at the outset of the Persian war. Exact numbers of hoplites in formation may have varied as much as several thousand at the lower limit to almost 40,000 at the outset of the Persian war (36). For our purposes, most battles during the Archaic and early Classical ages would have involved force sizes much closer to the lower limit.

These early phalanx forces were not hierarchical. One polemarch or "general" would be appointed to lead the charge. More like a squad leader, he would oversee the forming up of the phalanx, would give a brief exhortation or motivational speech, and would give the call to pick up armor and then to charge. Rather than remaining in the rear, the polemarch would charge and fight in the front line of the phalanx, which usually meant death. Thus, the polemarch was little more than an ordinary hoplite, appointed to offer some provisional coordination and organization to the already self-organizing lot. If he survived his tenure, he would surely return to the ranks of ordinary hoplites upon completion of his duties. The rest of the forces were equal in rank and role. The braver, more heavily armed hoplites would take position in the front lines to "protect the army behind them." The front line solders would have had to be sufficiently brave, for if they were to "flinch, the spirit of the whole army [would have fallen] apart" (Hanson, Western 119).

In Athens, the largest city-state, during the later Archaic and early Classical periods, about 30,000 hoplites could be fielded, half of which were infantry soldiers. The rest took on supplemental duties like equipment carrying or garrison duties (Connolly, 38). Each of the ten Athenian tribes provided one division (taxeis) to the phalanx force, each commanded by a taxiarch. These taxeis were further subdivided into lochos of eight ranks and twelve files (eight deep, twelve wide). Annually, 10 generals

(strategos) were elected. Three went with the phalanx during campaigns. These three probably commanded in rotation. The strategos who gave the commands would take up his position at the front right wing of the phalanx and fight with the hoplites (this is probably why three would go—so at least one might survive to lead the hoplites home). Thus, while some hierarchy existed, its purpose was not command and control in battle, but basic pre-battle organization.

c. Later Structures

Much more is known about the more complex and hierarchical force structure of the Spartan phalanx during the time of Xenophon. Most of this evidence is based on Xenophon's Constitution of the Lacedaemonians. J. K. Anderson has provided a thorough account of these structures in his Military Theory and Practice in the Age of Xenophon. Sparta was an anomaly of the Greek military system. The land-bound Helot slaves allowed the Spartans freedom to develop rigorous training programs and a hierarchical military organization. Yet, even with a more robust hierarchy, the commander-in-chief of the Spartan army, be it the king or a general, would still fight alongside the soldiers. The early fourth century Spartan army consisted of about 4,000 men, 1,000 of which were Spartiates (soldiers). Helots were being drafted into the army to keep up strengths. They were organized as follows. The king commanded a total phalanx force of six morae of infantry, plus an additional supporting mora of 60 cavalry units. Each mora (about 576 men) was commanded by a polemarch and composed of four lochoi. Each lochos, the basic unit of the phalanx (about 144 men), was commanded by a lochagos, and composed of two pentekostyes. These pentekostyes were further subdivided into two enomotiai, the smallest unit of the phalanx. Each enomotiai

consisted of three files, 12 men deep, and was commanded by an enomotarch who fought in the front right file (Connolly; Anderson, Xenophon).

Force structures during the Peloponnesian War and afterwards became more complex, since various city-states teamed up and cavalry began to play a larger, though still secondary, role. The basic force structure remained the same, though. The two key characteristics of the Greek phalanx structure were its simplistic flat hierarchy and its rigidity. These were, of course, interdependent, as one necessitated the other. The genius of the phalanx form was that it was a pure system—everything fit together. As long as it remained simple and non-hierarchical, it could afford to be inflexible. As long as it remained inflexible, no hierarchy was needed. The logic of the phalanx structure and function was internally consistent. The Chinese never imagined such a pure, internally consistent thing such as this. Their emphasis was always on increased flexibility, which necessitated increased hierarchy. Why? Perhaps because they could. Perhaps because the socio-political systems allowed such "advancements." Because of this, the Chinese theorists may have overlooked an important strategic element: the virtue of pure simplicity in form and function.

2. CHINA

"Those skilled in military operations are able to change their formations in such a way as to ensure victory based on the actions of opponents," says an ancient commentator on Sun Tzu's Art of War (Sun-Tzu, Cleary 84). Thus, the most important difference between Chinese and Greek force structure is that Chinese structure was of strategic importance while Greek structure had only tactical implications. While the Greeks had one dominant structure, the phalanx, at their disposal, the Chinese had

virtually unlimited options for organizing forces, and so the subject quickly became a topic of strategic inquiry. In Greece, force structure was largely determined by the fact that the phalanx form was the simplest way of coordinating untrained citizen-hoplites in battle, as well as by the fact that the weapons available lent themselves to phalanx-type warfare. In China, the socio-political situation allowed for training, for massive standing armies, and for utilization of various weapons systems—the force structure permutations were endless. What, then, determined what the dominant force structures would look like? In general, pre-determined concepts of operations played the largest role in determining force structure, since the particular operation of any army depends largely on the way it is structured. Chinese strategists would determine how they wanted to operate based on the conditions of the situation, and organize accordingly. As noted in a previous section, the dominant operational concepts in classical China consisted of themes such as 'attacking the weak and avoiding the strong,' and utilizing combinations of 'fullness and emptiness,' and 'orthodox and unorthodox' operational patterns. These, of course, are general concepts. As the Art of War quote above reminds, the specific concept of operations for a particular situation depended on the precise disposition of the enemy. Once that was known, the general concepts could be applied to the specific situation. And the first step in the application process was determining the appropriate force structure.

While force structures in China were never fixed, but contained many variations, a few generalizations can be made. In general, formations had to be maneuverable, since, as history has proven, the general concepts of operations usually manifested themselves in maneuver of some form. Also, formations were based on strict vertical hierarchies

with rigid command and control systems in place, allowing for quick dissemination of information and instructions, and for quick and precise response to commands. Force structures usually consisted of combined arms forces, where chariots, archers, and cavalry cooperated with infantry for greater effect. The troops had to be well trained in the formation arts so they could be flexible in shifting formations, but also able to be impenetrable if the need arose. On this topic of training troops in the art of formation, strategic theorist Wu-Tzu suggested that the general should "have them deploy in circular formations, then change to square ones. Have them divide and combine, unite and disperse." Only after the troops became fully familiar with the art of military formations should the general "provide them with weapons" (Sawyer, Seven 215-216).

Almost every classical Chinese war theorist devoted some time to the discussion of formations and force structure. Also, many of the historical treatises from the time tell of specific battles and describe the formations employed therein. Because of the many variations on formation, it is difficult to make a rigorous comparison with the single formation of classical Greek warfare. Thus, in order to make such a comparison worthwhile, I will focus my discussion on general themes that many of the Chinese formations had in common, and relate these themes to the phalanx force structure seen in Greece. It will be instructive to begin with a discussion of how these force structures changed and progressed from the Chunqiu to the Zhanguo periods.

a. Difference Between Chunqiu and Zhanguo Force Structures

Chunqiu period force structures, and warfare itself, were much more similar to Greek phalanx warfare than Zhanguo force structures and warfare. One author likens pre-Zhanguo warfare to a "great ceremony" conducted by the nobility (Ebrey, 10).

Armies were small and led by nobles mounted on chariots. Campaigns were short, lasting no more than a season, and battles lasted no more than a day. Moreover, these battles were "conducted in accordance with a code generally accepted" (Griffith, 30). For instance, it was considered unjust and sometimes illegal to "strike elderly men" or to injure previously wounded enemies (Griffith, 30). Soldiers and their generals avoided taking what was seen as "unfair advantage" of their opponents. These "battle codes" seem to be somewhat similar to the "code" of phalanx warfare, which despised surprise attack, deception, and the use of missiles, acts which were seen as unfair and lacking in virtue.

Formations in the Chunqiu were simple. They involved small armies of 30,000 men or less, and consisted of chariot-mounted nobles supported by ten to twenty times as many conscripts bearing swords and halberds. According to Sawyer, these early structures were made up of chariots grouped into squads of five, with five squads to a company. Attached to each chariot squad was a 100-man infantry company, twenty-five of which were officers. A battalion consisted of three to five chariot squads and supporting infantry (Sawyer, Seven 373). Tactics were also simplistic, involving either "variations of the head-on-head collision of two masses of men" (Lewis, 620), or "primitive melees" with "no decisive results" (Griffith, 33). Besides the chariots and the sheer size of these Chunqiu armies, this story is somewhat similar to the head-to-head collisions and ensuing melees of Greek phalanx battle (Lewis; Griffith).

These similarities with phalanx battle soon gave way to large dissimilarities beginning with the instantiation of massive standing infantry armies. Interstate militant competition increased dramatically. Strategic thinking developed. The

mass infantry quickly became the kernel of Chinese warfare, as conscript peasants were the most abundant resource any state had! They were also easier to train than charioteers. These changes emerged together, spurred by changes in the socio-political systems. As mentioned in the third chapter, The Chunqiu period was stage-setting period for the great of age of Chinese warfare to follow in the Zhanguo. By the end of the sixth century, the feudal states had achieved complete autonomy, save in name, from the Zhou court. The story of the Chunqiu was one of continuous power consolidation by a few leaders, eventually becoming kings of the warring states of China. By the Zhanguo, power consolidation was, for the most part, complete, and kings shifted their focus to hegemony and balance-of-power politics. The most common expression of this shift of focus was warfare.

Zhanguo force structures were dominated by infantry, as universal military service became commonplace. One author notes that "the total qualified populace could be mobilized for military campaigns, and....an entire country could go to war" (Sawyer, Seven 376). Chariots, the paragons of Chunqiu warfare, assumed secondary roles. Combined arms forces, utilizing new equipment such as the crossbow, were used in conjunction with infantry. Rigid vertical hierarchies based on rank were instantiated for command and control purposes. The sheer size of armies grew rapidly.

While most historical accounts probably exaggerated sizes of armies, we can glean a notional understanding of how big armies were. The Chan-Kuo Ts'e suggests that the state of Wei had 360,000 infantry, 200,000 crack troops, 600 chariots, and 5,000 cavalry. Similarly, the large states of Zhao, Hann, Qi, and Chu all had somewhere between 100,000 and 300,000 infantry, about 1,000 chariots, and about

10,000 cavalry. While each large state seems to have had a few hundred thousand men stationed in standing armies, only a fraction would be used in campaigns. No state would have put its entire army into action—the logistics alone would have been quite difficult to manage. Evidence from the Lu shi chunqiu and other sources suggests that no more than 50,000 men would participate in a campaign. Also, the scale of combat in terms of time and space was much larger in the Zhanguo than in the Chunqiu. In the Chunqiu, battles would last a day and campaigns a season. Zhanguo states could keep their armies in the fields at extended distances for long periods of time. Campaigns often lasted years (Lewis; Chan-kuo Ts'e).

b. Force Structure as a Function of Purpose

The key to understanding Chinese force structures lies in the fact that force structure design became a strategic activity. While Greek force structure was an unchangeable part of a pure system of warfare, Chinese force structure became an object to be strategically manipulated in order to achieve certain outcomes. Greece force structure derived naturally from clear tactical goals. It was the most efficient way to deliver a powerful, concentrated punch of high momentum, directed at the enemy's center of mass. Chinese force structures, on the other hand, in all their variations, were designed for—rather than derived from—specific goals, which, depending on the size and situation, may have been either tactical or strategic, or both. I will proceed to survey the strategic literature for further theoretical information relating to the major trends and themes of Chinese force structures.

c. General Force Structure Principles From the Theorists

Sun Pin on Formations and Force Structure: Sun Pin speaks about formations at two specific places in the Military Methods. The capable general, says Sun Pin, is he who has "gained the hearts of the people," knows the "true condition" of the enemy, and "in deploying his forces, knows the principles for the eight formations" (166). In this section, he does not specify the exact characteristics of the "eight formations." His purpose is to show that three factors enter into the strategic development process: knowledge of self, knowledge of the enemy, and an understanding of force structure in relation to the first two factors. Additionally, the general must know how terrain constraints factor into the selection of an appropriate formation: "in accord with the advantages of the terrain use appropriate formations from among the eight." Like other treatises on the subject, Sun Pin advised dividing the army into three forces, using one to attack and "the other two to consolidate the gains" (166). A further distinction between ordinary and crack troops was advised. For a weak enemy, "use... picked troops first to exploit it." But for strong enemies, "use weak troops first in order to entice them" (166).

In another section, Sun Pin suggests that supporting elements may be used to increase power and effectiveness. Chariots and cavalry should likewise be "divided into three forces, one for the right, one for the left, and one for the rear." Many chariots may be used if the terrain is easy, but if the terrain is difficult, cavalry should be used instead. If the terrain is constricted, the number of crossbows should be increased. The exact organizational structures of these combined arms forces are never given by Sun Pin, but he does offer insight into how cavalry can be used in conjunction with infantry.

Specifically, cavalry play supporting roles. Sun Pin suggests using their mobility to support the main infantry army in the following coordinated ways: to arrive at the enemy camp first, to pursue a scattered and chaotic enemy force, to counter an enemy by striking the rear, to intercept provisions, to cut supply and communication lines, to surprise unprepared and unorganized troops, and to go where not expected to go.

At times, he offers more specific information about formations. He proclaims that "three men (one of whom is an archer) are emplaced on a chariot; five men are emplaced in the squad....ten men make a line....a hundred men make a company....ten thousand men act as a martial force" (290). At another place, he suggests that ten "deployments" exist: "square, circular, diffuse, concentrated, Awl, Wild Geese, hooked, Dark Rising, incendiary, and aquatic" (214). He explains the purpose of each formation, sometimes esoterically. For example, "the square deployment is for cutting," the "diffuse deployment is for rapid (flexible) response," the "concentrated deployment is to prevent being cut off," and the "Awl formation is for decisively severing the enemy" (214). He explains some of the formations in greater detail: for the Dark Rising deployment, which is for "causing doubts in the enemy's masses and difficulty for his plans,"

> ...make the flags, pennants, and feathered banners numerous....If the mailed troops are confused have them sit; if the chariots are disordered array them in rows. When they have been ordered, the infantry should come forward with a great pounding and tumult, as if descending from Heaven, as if coming out from Earth, and be unwavering. Throughout the day they will not be taken; (216)

for the square deployment, which cuts,

> ...thin out the troops in the middle and make those on the sides thicker. The reserve formations are at the rear....By expanding and making the

> sides heavy, the general can cut the enemy. Retaining the reserves in the rear is the means by which to react quickly. (214)

Most of the formations depend on this ability to "react quickly." With so many variations, soldiers had to be well skilled in transitioning quickly between formations in response to changes in terrain or enemy disposition.

Mobility was also an essential factor in almost every formation, some more than others: "the tactics for diffuse deployment lie in creating numerous small operational units. Some advance, others retreat. Some attack, others hold and defend. Some launch frontal assaults, others press their developing weaknesses" (215).

According to Sun Pin, force structures should be designed to attack the enemy's weaknesses. Thus, heavy troops should be used in "attacking light troops." Also, "to go against short weapons use long weapons." This principle of asymmetric response applies not only to responding to the actual enemy disposition, but also to what the enemy expects. Thus, "unusual movements and perverse actions" should be used to play on such cognitive biases.

Finally, deception was often a large part of the formation science for Sun Pin. "Hidden plans and concealed deceptions are the means by which to inveigle the enemy into combat" (204). For instance, "slow movements" could be used to lure the enemy into combat. Also, a general might organize his troops chaotically so as to convince the enemy that he is uncoordinated, thereby inciting a specific form of attack by the enemy. Then, the general could quickly establish order and strike at the enemy's weakness.

Thus, each of Sun Pin's formations have these factors in common: mobility, combined-arms, quick transitions between formations, and tight command and control elements to manage all of these.

The Six Secret Teachings on the Way of Strategy: This treatise on strategic thought, nominally attributed to the famous eleventh century B.C. general known as the T'ai Kung, but undoubtedly written during the Warring States period, treats, among other topics, the study of force structure in a manner very similar to that of Sun Pin. The treatise takes the form of a discussion where the T'ai Kung is offering advice to the Kings Wen and Wu, founders of the Zhou dynasty.

The T'ai Kung suggests that when a general designs the force structure of the army, he should not "cling to one technique," but be "constantly changing and transforming with the times" (Sawyer, Six 93). To do this, he should design his forces so that a deep vertical hierarchy exists whereby he may delegate duties. Among the top level officials, the general should have the following: one chief of planning, five planning officers, three astrologers, three topographers, nine strategists, four supply officers, four recruitment officers, and various other officers making up a general staff of about seventy (93-95). The exact hierarchical structure of these offices is not given, but is somewhat intuitive.

Besides this advice about the general staff, the T'ai Kung offers advice about particular formations for given situations, all similar or identical with the Sun Pin treatise. The themes are the same. Formations depend upon the disposition of the enemy and the terrain. Mobility is a key factor, as is combined-arms. For instance, in forest warfare, spearbearers and halberdiers should be organized into "squads of five," while the

archers and crossbowmen are stationed outside. Battle chariots should "occupy the front," and "cavalry can be used in support" (137). In a later section on infantry warfare, the T'ai Kung advises:

> When infantry engage in battle with chariots and cavalry...the long weapons and strong crossbows should occupy the fore, the short weapons and weak crossbows should occupy the rear....they must maintain a solid formation and fight intensely while strong soldiers and skilled crossbowmen prepare against attacks from the rear. (163)

Various other suggestions abound, each relating to specific situations.

Other Military Treatises: Almost all of the other treatises on strategy from the Zhanguo period say something about formations and force structures, all of which are essentially the same as the above example. Wu-Tzu concentrates on the relationship between force structure and terrain: "when employing larger numbers, concentrate on easy terrain; when using small numbers concentrate on naturally confined terrain" (Sawyer, Seven 220). The Methods of Ssu-Ma concentrates on the relationship between force structure and military purpose: "When you employ a small number they must be solid. When you employ a large mass they must be well ordered. With a small force it is advantageous to harass the enemy; with a large mass it is advantageous to use unorthodox tactics" (Sawyer, Seven 142). The exception to the rule is Sun-Tzu's Art of War, probably the earliest of the strategy texts to be compiled. While Sun-Tzu does not say anything specific about force structure or formations, he does make implicit reference to formations through analogy, and he does proffer the same general themes about force structure as are encapsulated in the Sun Pin and the other treatises.

Thus, the general themes about force structure encapsulated by the military treatises—mobility, combined-arms, quick transitions, and deep hierarchies—

show that robust differences existed between Chinese and Greek conceptions of force structure. The Greek concepts of force structure were kept simple because of socio-political constraints—they had no other options given the conditions. Also, Greek phalanx structure made sense within the internally consistent Greek way of warfare. The Chinese, not limited by socio-political constraints, but motivated by intensive competition to innovate, developed an ideal system of strategy, encapsulated in the military treatises, which treated force structure as an element strategy. The themes they developed were the result of rational strategic thinking rather than necessity.

d. Historical Evidence

It may be helpful to discuss how these ideal-type strategies and conceptions of force structure revealed themselves in actual battle formations. I will briefly consider a historical account of a particular battle from the Tso-chuan, the battle of Ch'eng-p'u (632 B.C.), which pitted Duke Wen of Chin against the state of Ch'u. I will point out specifically how all of the major themes of force structure taught by the strategists appear in this actual battle account.

In the Tso-chuan, the actual accounts of battles, and especially of the specific force structures employed, are brief and leave much detail up to interpolation. One analyst, Frank A. Kierman Jr., has provided a detailed reconstruction of this particular battle based on Tso chuan and Shih Chi accounts. The account begins with the two armies, relatively equal in size, pitted against each other in a rather conventional manner, face to face across a "relatively featureless" North China plain. Each army, like the strategists suggest, was divided into three sections: a center army where the commander-in-chief dwelt, and right and left armies. The Qin army had a chariot

regiment nestled between the center and upper armies. Additionally, the Qin center army consisted of two sections: the main infantry force making up the majority of the center army, and an elite force, Duke Wen's bodyguards, called the "first army," attached to the right flank of the main part of the center army (Kierman, 47-56; Tso chuan, 60-62).

Qin attacked first, beginning with an advance of both left and right armies. The Qin left engaged first, smashing the Ch'u right army in an attack that was "urgent, impetuous, and rapidly successful" (Kierman, 51). The Qin right army then served as a "holding force, fixing the Ch'u center and preventing it from attacking the Qin center or aiding the Ch'u left wing" (Kierman, 51). The Ch'u center could not move, since doing so would invite a flank attack from Qin left. While this was happening, Qin right was also advancing. They advanced to a predetermined spot, within bowshot range, and quickly reversed, feigning flight. The Ch'u left took the bait and pursued. Before the battle, tree branches had been pre-placed in front of the Qin right army at the point where they turned and feigned flight. As the Ch'u left army made its way towards these branches and the fleeing Qin right, the Qin chariots swept across the front, dragging the tree branches. This dragging action caused dust to rise, obscuring the "fleeing" Qin right army, who, behind the veil of dust, was presumably circling out left with plans to take Ch'u's flank. The chariots did not engage the advancing Ch'u left army. Instead, as they approached, Qin's "first army," the Duke's elite unit, broke from the center and swept into the Ch'u left army flank. At this precise moment, the Qin right army who had feigned flight appeared at the scene to rout the Ch'u left army (Kierman, 51).

Thus, while exact force structures are not given, we can glean from the story that the major force structure themes were utilized. As for the Qin army, they were

highly mobile—they were able to execute an effective feint involving a mass infantry force, as well as several sweeping and flanking maneuvers. Qin used combined arms in a most ingenious way as part of a ruse de guerre. Interestingly, as suggested by the theorists, the chariots played only a supporting role and did not engage infantry forces. The Qin forces must have been able to transition quickly between formations—the feigning maneuver and subsequent circling and attack demonstrates this. We also know from the Tso chuan and Shih Chi accounts that rigid hierarchies were in place and largely responsible for the effectiveness of the Qin army in routing Ch'u. On the other hand, the Ch'u army seemed rigid in their formations and their strategy. The Ch'u center stood its ground while an entire third of the Ch'u army was smashed. The Ch'u left army made a direct frontal assault at what seemed to be a fleeing army. Even if Qin right was fleeing, this action by Ch'u left seems completely unimaginative. Essentially, Ch'u was less mobile, had no combined-arms structures aside from archers, and was unable to make rapid transitions from offensive to defensive formations.

The above battle analysis suggests an important point: that the ideal type of warfare heralded by the strategic theorists, as both "graceful and imaginative," was not always so, and probably rarely instantiated in its ideal form. The Ch'u army actions are a case in point. The same was true for Greek force structure. Indeed, the many phalanx battles during the great period of warfare fell short of the ideal type phalanx force structure—there was rightward shifting, dispersion, and confusion while the ideal type suggested that tight phalanx integrity should remain throughout the battle. At any rate, the comparison of Greek ideal-type force structure with Chinese ideal-type force

structures reveals many dissimilarities, all of which are directly attributable to the particular socio-political situations of the two societies.

C. COMMAND, CONTROL, AND COMMUNICATIONS (C3)

1. GREECE

a. Psychological Command and Control

"Men, it is a fine thing for me to die right here" proclaimed the Spartan commander Anaxibos after leading his men into certain defeat (Xenophon, "Hellenica" IV: 7.38). The image of the Greek commander leading the charge of the phalanx from the front lines, running willfully into a wall of shields and spears, is always a part of our ideas about ancient Greek warfare. The simplicity of the pure system of Greek warfare, of mass shock attack, of collision of armor and impaled bodies, must have been even more psychologically trying than it was physical. The mental anticipation of a slow, painful, and bloody death that attended each soldier in the moments before the charge and collision was perhaps, as Stephen Segal suggests, worse than death itself. Or, perhaps not. Each soldier new the tales of graphic death in the poems of Homer, tales of spears driven through skulls where brains "ran from the wound along the spear by the eye-hole" (Homer, "Iliad" XVII: 297). They were fascinated by these tales, as if the ultimate test of ethos, of character, was physical confrontation of fear. Indeed, there seems to be no greater fear than that of pain and slow death via impalement or dismemberment—the almost inevitable results of the collision of phalanxes. The Greeks took pride in their conquering of the death-fear. Like the poets, and like the stoics who taught that each man must "accustom [himself] to think that death means nothing" (Agard, 162), they believed that fear of death spoiled life, and must therefore be eradicated. Through the tragedies on stage, and through war, they learned, like Neitzsche, to "reaffirm the will to live in the face of death." And so, inspired by the poets' words:

> Do not fear the multitude of their men, nor run away from them.
> Each man should bear his shield straight at the foremost ranks
> And make his heart a thing full of hate, and hold back the flying
> Spirits of death as dear as he holds the flash of the sun, (Hanson, Western 96)

they followed their leaders to their deaths.

It is perhaps these amazing practices of leadership-by-example in battle that allayed the soldiers' fear of battle and allowed the insanity of phalanx shock warfare to continue for centuries. In reality, the roles of the phalanx commander were these: order and oversee the forming up of troops into phalanx formation, deliver the pre-battle motivational speech, call the order to charge, and lead the charge from the front. The last of these was undoubtedly most important. The purpose must have been to inspire and rally the men to fight well, and especially to gain advantage at the collision, the point of the battle where attaining relative superiority was essential to ultimate victory. Indeed, the outcomes of hour-long battles were often determined at the collision. The sight of the fearless leader who led from the front into the face of battle must have inspired the soldiers to live up to that standard of bravery. Thus, Greek command and control was largely psychological in character.

How important was psychological command and control? Given the nature of phalanx warfare, where the task was relatively simple and readily understood by each warrior, and given the fact that opposing phalanxes were usually equally matched in strength and skill, advantage in battle came not from stratagems or maneuvers, or even by numerical superiority, but through psychological factors. Brute strength during the collision alone usually determined the victor. If two armies were equally matched in terms of strength, the victor would be the army who could sufficiently allay the fear of

death and be motivated to deliver the heaviest shock possible. The vigor of the leader in motivating his troops through words and actions played an immense role in this physical game of equals. The Greek hoplites were not automatons. They knew that the body was slave to the will of the mind. Victory would smile on the army whose commander could inspire and focus the minds of his soldiers. Even Xenophon saw this, proclaiming "I am sure that not numbers or strength bring victory in war, but whichever army goes into battle stronger in its soul" ("Anabasis" III: 1; Gabriel, Heroes 46). How strange that victory, in this contest of physicality, was determined largely by the inexplicable psychological mechanisms of leadership.

b. Non-psychological C3 Elements

The other more managerial roles of the phalanx commander point to the fact that the Greeks did not have elaborate command and control systems—nor did they have needs for such systems. In this self-organizing system of war, the citizen-soldiers mobilized, organized, and largely controled themselves. The objectives of battle were readily understood by all soldiers—run at the enemy and stab, slash, push, hit, or step on him! Keep doing that until you are exhausted or there are no enemies left to fight (because they are either exhausted or dead). That's simple enough. Furthermore, each citizen wanted to play a role in state defense. As Anderson notes, no citizen was "ready to pay taxes to support a standing army....indeed he would have thought it disgraceful to pay someone else to relieve him of one of the most perilous and difficult of his obligations" (Xenophon 5). Obligated by citizenship, the hoplites were expected to (and did) show up by their own means, and without someone forcing them or keeping tabs on them. Because of this, and because there was virtually no strategy involved in phalanx

campaigns, only a minimal amount of command and control was needed, and this was provided mostly by physical systems built-in to the phalanx form.

I have already discussed some of these systems. Armor played a large role. While the charge at the enemy might result in a dispersion of force—a thing which, Thucydides notes, "large armies are prone to do as they march forward to battle" (Thucydides, V: 70)—the shield on the left arm caused a need to pack closely together, an act essential for phalanx success. The famous tendency to shift to the right in battle could be curbed by placing the best soldiers on the right side of the phalanx—this is perhaps why the commanders took these positions. The othismos aspidon, the pushing mechanism that began upon impact, was supported by the weight of the middle and rear ranks leaning against their shields, which seem to have been designed both for personal defense as well as for this "group push." Trustworthy veterans were often placed in the last ranks to ensure that no one deserted during the crucial moments of battle. More advanced command and control elements simply did not exist—and they didn't have to. The phalanx was a self-guiding organism, a holistic system, where each element functioned perfectly in concert with the others in a logically consistent pattern. This, above all, must be the reason for its unchanging dominance across several centuries, as well as for the fascination that the modern world has for it.

Something should be said about communications in the phalanx system. Communication on all levels was difficult in phalanx warfare. I have already mentioned the difficulties hoplites had with hearing while wearing brass helmets. The "storm of

spears,"[11] the smashing armor and helmets, the war cries, and the thunder of trampling feet must have made hearing impossible. The onus was on each hoplite to stay close to his neighbor and to carry out his tasks until the end with no guidance from the commander. Communication on a larger scale was equally unnecessary. Phalanxes did not need long logistics trails. As Anderson notes, "because the invading army did not intend to stay, it did not need to keep its lines of communication clear behind it" (Xenophon 7).

c. Later, More Advanced C3 Systems

Again, Spartan command, control, and communication was a bit more advanced, especially during the time of Xenophon. Anderson, Connolly, and others have reported on these systems, taking most evidence from the extant work of Xenophon himself. Since the fourth century Spartan phalanx was based on a deeper hierarchical structure, commanders at various levels had slightly more command and control responsibility. The commanders played a larger role in marching, forming up, and training. Communications, however, seem to have been at the same level as other city-states, where any messages traveling from the commander to the soldiers would travel from soldier to soldier via word of mouth. Despite the seeming advancements in structure and C3, one particular example points to the fact that communication as well as command and control flowed laterally as well as hierarchically at times. Thucydides says the following about the Spartan advance towards the dug-in Argives during the Mantineia campaign (418 B.C.):

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[11] The phrase is from Sophocles' "Antigone."

> ...one of the older men in the army, seeing that they were advancing against such a strong position, shouted out to Agis [Spartan General] that he was trying to cure one evil with another, meaning by this that he was wanting to make up for the retreat from Argos, for which he had been blamed, by now courting danger at the wrong time. Agis....quickly led his army back again before it had come to actual fighting. (V: 65)

If an ordinary soldier could determine the course of action of the entire Spartan phalanx in this way, C3 was certainly not very advanced. This story also points to the notion that the phalanx was an army of equals, not of pawns or automatons who were led to their deaths, but of thinking soldiers who believed in the collective good of the phalanx force.

2. CHINA

While the physicality that dominated phalanx warfare resulted in the psychological anguish of many a hoplite, Chinese warfare, dominated by intellection of the generals, seemed to result in widespread physical calamity with little psychological effects. Throughout the histories we read accounts of whole armies responding instantly and without question to the orders of their generals, often resulting in mass trauma or death. For instance, in trying to escape from the approaching Ch'u army, the Chin leader, Hsun Lin-fu, ordered the army to cross the river:

> "The first to cross the river wins a reward!" The central army and the lower army struggled with one another over the boats, until there were so many fingers in the bottoms of the boats [which occupants of the boats had cut off from hands grasping the gunwales in order to prevent capsizing] that one could scoop them up by the handful. (Tso chuan, 96)

The histories are full of accounts like this, demonstrating the command and control power that could be derived from legalist principles of rewards and punishments,

and downplaying traumatic injuries. The punishments were indeed harsh, and yet they are always spoken of with marked nonchalance. Even Sun Pin, the warfare theorist, became a victim of the ridiculously harsh system of punishments. In fact, Sun Pin means "Sun the footless" as "Pin" means "to cut off the feet." This was the third of five mutilating penalties, which in order of severity were: (1) branding of the face, (2) cutting off the nose, (3) cutting off the feet, (4) castration or claustration, (5) death. Sun Pin suffered the third after a jealous enemy trumped up a false charge against him (Griffith, 59).

Thus, the main mechanism for command and control in China was the instantiation of the legalist paradigm of rewards and strict punishments. The key to this "carrot and stick" method was that the rewards were never balanced with the punishments—the punishments would always be far worse than the rewards were beneficial. The fact that such tales of harsh punishments are always told with an insouciant tongue throughout the literature suggests that the masses had become inured and perhaps hardened to the methods of state control. They learned to expect mutilating punishments for rather minor offenses. Perhaps, the consequences of war, which was often death, did not seem so bad juxtaposed with these perverse mutilation practices. Whatever the explanation, the comparison with Greece is quite interesting. In Greece, the soldiers were motivated to fight well in the phalanx battles of their city-states by inner mechanisms—whether it was duty, the desire to support their fellow citizens, or other psychological motivators discussed above. Thus, little external command and control was needed. In China, the opposite was true. Chinese soldiers were made to fight by the

states. Their motivation was completely external—if they didn't obey the will of the state, mutilation!

It is difficult to imagine exactly how the individuals of ancient China felt about this system. Almost nothing is said about the individual's plight amidst the duties of war and the threat of state sponsored mutilating punishments, and whatever is said is said with marked nonchalance—as if the individual's viewpoint was not important or interesting. To the state and to the historians, it wasn't. This is quite opposite from the situation in Greece where the literature is most interested with the individual's role in politics and war. We can only imagine that the citizens of Chinese states had become hardened. Because of this, they were extremely obedient—especially in war. Having already given one example above of the command and control theories implicit in the histories (the severed fingers), it will be instructive to consider the vast theoretical literature on the subject.

a. Command and Control Theory

Each major ancient Chinese war theorist devoted at least some attention to C2 theory. Much of command and control theory was very similar to existing theories of state control of power championed by the founder of the legalist school, Han Fei-Tzu: "let [the ruler] apply punishments and the greatest tigers will grow docile" (Watson, 8. 39-40). Two other aspects of command and control theory, along with legalist principles, dominated ancient Chinese strategy texts: generalship, and psychology of ch'i, or spirit. I will briefly survey some of the textual evidence relating to these three C2 principles.

The Legalist Paradigm: Sun-Tzu, the leading warfare theorist, says little explicitly about rewards and punishments and their role in C2. He does make implicit homage to the usefulness of programs of rewards and punishments. Sun-Tzu warns:

> If you impose punishments on the troops before they have become attached, they will not be submissive. If they are not submissive they will be difficult to employ. If you do not employ punishments after the troops have become attached, they cannot be used. (Sun-Tzu, Sawyer 22)

Sun-Tzu realized the importance of rewards and punishments in command and control, but according to this and other esoteric passages, he did not seem to believe that systems of rewards and punishments alone could be enough to maintain control over an army. Rewards and punishments would only be effective after the troops had "become attached." By this, Sun Tzu meant that other deeper and perhaps psychological motivators should be used in controlling the troops and bending them to the will of the general. Sun Pin expounded on these ideas. He too ascribed to systems of rewards and punishments: "make your rewards and emoluments clear and then the troops will advance without hesitation....If you kill the officers, then the officers will certainly submit to your awesomeness" (Sun Pin, 190). Thus, rewards and punishments must be thoroughly understood and extensively promulgated to be effective. The punishments must also be worse than the threat of death from battle in order to motivate soldiers to "fervently advance into battle and be willing to die without regret" (Sawyer, Complete 191). Yet, Sun Pin also admits that deeper C2 elements must be a part of a general's C2 program. He devotes a whole chapter to the discussion of ch'i, the spirit, or 'pneuma,' of life, thus expanding on the implicit ideas of deeper psychological motivators found in Sun Tzu. I will discuss this in greater detail below.

Other military classics, especially the Wu-Tzu and the Wei Liao-Tzu elaborate on the idea that promulgation of strict laws is essential for military command and control. Wu-Tzu devotes a whole section of his treatise to the discussion of controlling the army. He says:

> Control [and not large numbers] is foremost....If the laws and orders are not clear, rewards and punishments not trusted; when sounding the gongs will not cause them to halt or beating the drum to advance, then even if you had one million men, of what use would they be? (Sawyer, Seven 214)

Thus, for these theorists, all military excellence derives from training and control. Rewards and punishments tie these two mechanisms together. Troops are trained in order to be readily controlled during warfare. During training, they learn to expect harsh punishments upon their disobedience. This relationship between training and control in battle, and their mutual reliance on strict punishments, is best encapsulated in the Shih Chi story of Sun-Tzu's famous "training of the concubines." Part of this passage is quoted at the beginning of this section.

The Theory of Generalship: While the focus of Greek warfare, as reflected in the poems, dramas, and histories, was on the individual citizen-soldier in battle, Chinese warfare theory and history were rarely concerned with the ordinary soldier save to note that ordinary soldiers were objects to be controlled and utilized in warfare. The focus of Chinese warfare theory was instead on the general, the "supporting pillar of the state" (Sun-Tzu, Sawyer 51). Battle narratives were usually centered around the achievements of a single general. Even the great warfare treatises were usually compiled by successful and famous generals. This focus on the generalship rather than on the soldiers makes sense. In Greece, the dynamo of the phalanx was the citizen-

hoplite. Each hoplite was basically equal, and generals played minor leadership roles. In China, with the widespread use of mass peasant armies, generals had large command and control responsibilities. Since soldiers had little internal motivation to fight, generals had to motivate and control their soldiers in combat. A good general was thus an extension of the state, and the relationship between the two, as well as the general's role in command and control of the troops became topics of inquiry for the warfare theorists.

Sun Tzu and Sun Pin devoted much of their treatises to discussions of the characteristics of good generalship. Sun Tzu suggests that a general should have five virtues: "intelligence, trustworthiness, humaneness, courage, and sternness" (Sun-Tzu, Cleary 45). Sun Pin expounds upon this point, suggesting that the general must cultivate Te, or 'virtue.' Sun Pin devotes an entire section to the study of generalship, where he suggests that a general will excel if "he regards the troops like and infant, loves them like a handsome boy, respects them like a severe teacher, and employs them like clumps of earth" (Sun Pin, 256). Sun Tzu and Sun Pin also suggest with great enthusiasm that a general should be autonomous in the battlefield. The story of Sun Tzu training the concubines suggests this point: when the King of Wu asked Sun Tzu not to decapitate his favorite concubines, Sun Tzu replied "I have been appointed commander....and the commander in the field is not bound by the orders from his sovereign" (Shih Chi 13).

The other theorists, especially Ssu-ma, Wu-Tzu, and Wei Liao-tzu, also discussed the Tao, or 'way,' of generalship. Besides naming and discussing the necessary characteristics of good generalship, the treatises often suggest that entire enemy armies can be defeated simply by knowing the ways of the enemy general. Wu-Tzu suggests specific ways of doing this:

> A commanding [enemy] general who is stupid and trusting can be deceived and entrapped. One who is greedy and unconcerned about reputation can be given gifts and bribed. One who easily changes his mind and lacks real plans can be labored and distressed. (Sawyer, Seven 218)

Thus, great importance was placed on the role of a single figure, the general. This prominence of the single commander in warfare is in accordance with the ancient Chinese political situation, where a single ruler was the dynamo of political power.

The Psychology of Ch'i: Perhaps a correlation with Greek command and control does exist. No name was given to the Greek psychological forces which motivated men to charge and die in the phalanx next to their commander. Such pathos in battle was named by the Chinese—they called it ch'i, which loosely means 'spirit of life.' Ch'i, an important part of Chinese thought and philosophy even before the Chunqiu and Zhanguo periods, was originally represented by a character that "represented the vapors rising from cooking rice and [was] thus symbolic of nourishment in every sense" (Sawyer, Complete 23). Sun-Tzu talks about notions of ch'i both directly and indirectly throughout his treatise. Specifically, when the general has motivated the troops via means other than rewards and punishments, he has cultivated ch'i. The general must seek to confront the enemy only when his troops are in high spirits and the enemy's troops are devoid of ch'i. How could a Zhanguo-period general cultivate and stimulate ch'i in his troops besides offering rewards? Sun Pin devotes an entire section to this question. For Sun Pin, the general's main duty is to control the ch'i of his troops—to expand or sharpen it before battle, but not too sharp so that the soldiers become destructive. Sun Pin provides a thorough algorithm for ch'i manipulation: (1) "Stimulate [the troops'] ch'i" by

"promulgating the mission statement in order to overawe the warriors." (2) "Sharpen their ch'i" by issuing the orders. (3) "Hone their ch'i" by providing minimal rations and coarse clothing—in this way their "families are honored and the men motivated." (4) Lastly, "expand the men's ch'i" right before engaging in combat by severing all communications to cut off hope for life (Sun Pin, 194).

Thus, Chinese warfare theory suggests that to be successful in violent combat, soldiers must be committed to death—like the Greek hoplites, they had to "reaffirm the will to live in the face of death." It makes sense that notions of ch'i and notions of preparing the spirit for the deathblow of battle were prevalent in both Greek and Chinese warfare cultures. For one of the few things that the two warfare cultures had in common was the trauma and gore of close-in infantry combat, and the fear necessarily associated with it. Both cultures sought means to overcome the fear of bloody death associated with battle. For the Greeks, the general was a motivating force—"it is a fine thing for me to die right here," said Anaxibos. Chinese generals followed a more rigorous algorithm for motivating troops, but the outcome was essentially the same as for the Greeks. The generals learned clever strategies for manipulating their troops' ch'i, but the goal, to prepare troops psychologically for the horrors of combat and to eliminate fear of death or injury, was the same as that sought by the Greek generals—as Wei Liao-tzu notes:

> ...when [the soldiers] are committed to die they will live....A hundred men willing to suffer the pain of a blade can penetrate a line and cause chaos in a formation. A thousand men willing to suffer the pain of a blade can seize the enemy and kill his general. Ten thousand men willing to suffer the pain of a blade can traverse under Heaven at will. (Sawyer, Seven 198)

The real difference between the Greeks and Chinese with regards to ch'i was that the Greeks made little effort to manipulate and use the enemy's fear as a means of gaining an advantage over that enemy. The Chinese did exploit such mechanisms. The T'ai Kung suggested taking advantage of the enemy's fear so that "one could attack ten." Similarly, the Ssu-ma Fa suggests: "attack when they are truly afraid, avoid them when they display only minor fears" (Sawyer, Seven 197). The power derived from manipulation of the enemy's fears could be great. As Wu Tzu reminds, "one man oblivious to life and death can frighten a thousand" (Swayer, Seven 198). Perhaps this is why Sun Pin suggests that "if you want to engage in battle, act as if deranged" (Sun Pin, 230). The Greeks overlooked an important element of the military psychology of fear: manipulation of the enemy's fear.

b. Communications

A few brief comments should be made about Chinese communication systems. The high degree of combined-arms coordination patterns evident in Chinese warfare suggests that communication before and during battle was key to success. In fact, solid communication systems were probably one of the most essential features for coordinating and controlling mass infantry and combined-arms armies. Because of this, most of the warfare theorists have suggested that cutting off or interrupting an enemy's communications would be a strategically desirable move. While in Greece, communication during battle was done via the voice, Chinese communications techniques involved drums, whistles, gongs, and other technical equipment to confer messages and commands. Training often involved the coordination of weapons and movement training with command signals:

> For leading the Three Armies you must have the constraints of the gongs and drums by which to order and assemble the officers and masses. The generals should clearly instruct the commanders and officers, explaining the orders three times, thereby teaching them the use of weapons, mobilization, and stopping, all to be in accord with the method for changing the flags and signal pennants. (Sawyer, Six 154)

Not much detailed information is available on the exact formats of such systems, but the systems were undoubtedly more advanced and more efficient than Greek word-of-mouth battle communications.

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V. CONCEPTS OF OPERATIONS

I noted in the previous chapter that in an ideal system of warfare, concepts about how the military should operate in a given situation ("concepts of operations"), determine how the military mobilizes and organizes to fit with these predetermined employment criteria. Of course, in real life, it never happens quite like this. Yet, in real warfare systems, predetermined concepts of operations still play a large role in shaping the way wars are fought. The difference between ideal-type warfare and real warfare is that real warfare is shaped partially by socio-political constraints, which determine the feasible set of possible defensive action options for a given state. Thus, concepts of operations—strategic ideas about how a given state should operate—work within the framework of the feasible set and serve to select the best defensive action option among all possible options. In simple terms, an army plans, and decides what it would like to do. The army then examines the feasible set of options and selects the option that is presumably closest to its original concept of how it wants to operate!

In the last chapter I was able to provide some insight into how Greek and Chinese states organized for war differently. In that discussion, much information about how the two societies actually engaged in warfare was provided. Based on that comparison of organizational factors and their resultant operational effects, I will in this chapter discuss how these warfare elements grew from concepts into realities. This chapter is designed to examine both the different operational concepts of ancient China and Greece as well as the way such concepts were implemented vis-à-vis the socio-political constraints. As

already mentioned, one main difference between the two societies was that China had more opportunity to implement pure forms of their operational concepts since they were less constrained by socio-political factors. Because of this opportunity, they devoted a great deal of intellection to the development of robust strategic concepts. Greece, being heavily constrained by socio-political factors, had few options. They had little opportunity to implement any concepts of operations that were more complex than "charging at the enemy's center of mass with a directed force." Consequently, their concepts of operations remained simplistic in order to fit with the other aspects of their warfare system already defined and determined by socio-political constraints.

The comparison given in this chapter looks specifically at linear and non-linear operational concepts. The discussion will show that Greek strategic concept development was limited to simple "linear" operational concepts, while Chinese concept development incorporated complex strategic combinations of both "linear" and "non-linear" mechanisms. These terms will be defined and discussed in greater detail below.

A. A BRIEF SURVEY OF LESSER CONCEPTS

Before teasing out the details of the 'linear/non-linear distinctions, it will be instructive to briefly mention two other lesser important concepts of operations prevalent in the Greek and Chinese warfare systems. The Greeks and the Chinese had very different concepts about 'time and space' in relation to warfare. Greek warfare concepts were much smaller in scale in various ways in comparison with Chinese concepts. The Greeks were conceptually prepared for single pitched battles as the deciders of entire campaigns, while Chinese battles were a much smaller part of the Gestalt of their warfare concepts and their campaigns, which often lasted for years. Also, different meaning was

attached to battles. For the Greeks, single pitched battles were the central elements of warfare. These battles were the sole deciders of campaigns. For the Chinese, battles were of lesser importance. Diplomacy and campaign strategy were the important elements of Chinese warfare, and victory in individual battles was ideally and often determined, by other means, before battle began—as Sun-Tzu points out, "a victorious army first wins and then seeks battle; a defeated army first battles and then seeks victory" (Sun-Tzu, Cleary 91).

The Greeks and Chinese also had very different concepts about surprise and deception. The Chinese placed much greater emphasis on these forms of "intellectual warfare" than the Greeks. This makes sense in light of the differences in socio-political constraints within the two societies. As noted, the Greeks, being heavily constrained by socio-political factors, had little opportunity to develop creative operational concepts—their operations were necessarily kept simple and relegated to realm of physicality. "Intellectual warfare," such as the rigorous use of surprise, intelligence, and deception, would have required far more freedom to develop creative warfare concepts than was ever available to the Greeks. Chinese warfare however, being far less constrained socio-politically, thrived in the realm of intellection. Almost any creative warfare concept could be employed if desirable, and "intellectual warfare mechanisms" proved to be useful, successful, and extremely appealing for political, social, and philosophical reasons. As Sun-Tzu famously suggested, "subjugating the enemy's army without fighting is the true pinnacle of excellence" (Sun-Tzu, Sawyer 50). This is more than just a 'concept of operation.' There's a deeper philosophical context here—the apotheosis of

intellection and the human mind over physicality. Perhaps there's some truth to such notions. Is not war, after all, ultimately a game of strategy, a game of the mind?

B. LINEAR AND NON-LINEAR OPERATIONAL CONCEPTS

Before delving into the nuances of comparison, I will make some effort to explain what I mean by these technical terms, "linear" and "non-linear," with regards to operational concepts. The terms have an intended mathematical connotation, conjuring images of the Cartesian coordinate system, where a straight line and corresponding equation with variables not exceeding the power of one are referenced by the term "linear," and where some more complex curved pattern and corresponding equation are, of course, "non-linear." Thus, the two aspects embedded in the mathematical connotations of these terms that I would like to map onto the realms of warfare operations are (1) the straight vs. curved lines of the linear/non-linear dichotomy, and (2) the difference in complexity of the variables (linear equations have variables not exceeding the power of one, while non-linear equations necessarily have at least one variable exceeding the power of one). My conception of linear and non-linear warfare operations are based upon these two mathematically reminiscent distinctions.

The first distinction, the straight versus curved lines, is intentionally visual—it works in the following way. A linear warfare operation is simply that which makes use of the notion that the most efficient and best way to defeat an enemy is to direct an attack directly at him. For instance, if my army is at point A and the enemy waits at point B, the battlefield is a coordinate system and the shortest distance from me to him, A to B, is a straight line. If I engage in a linear operation, I will not outflank him, I will not lure him into to coming to me, I will not do anything but go directly at him over the straight line

path and attack his center point. Much like the graphical distinction between the linear line that is straight and the non-linear line that is anything but straight, a non-linear operation is that which is anything but a linear operation. There are many more options that would fit this criteria of non-linearity, including flanking maneuvers, luring operations, traps, deceptions, etc. The point is that linearity with respect to warfare operations means direct, "straight line" action towards the enemy, while non-linearity includes almost everything else.

The second distinction, the complexity distinction, is intentionally conceptual. A linear equation is simple and easily solved. It may have many variables, but the variables are not complex—they are all necessarily single power variables. A non-linear equation is inherently complex and much broader in meaning—it is negatively defined meaning that it incorporates all that is not 'linear.' These equations are often only solvable by approximation. Thus, linear warfare operations, besides involving some version of the straight-line directed attack, are necessarily simple operations. They are easily understood, require little mental energy to develop, and lack strategic creativity. This fits with the straight-line directed attack, since such operations are inherently simple—they are dominated by physicality and require less command and control since the operation is readily understood by all participating parties. Non-linear warfare operations are inherently more complex than linear operations. For our purposes, such complexity usually derives from more elaborate strategic concepts—the dominance of intellection rather than physicality. A rough analogy might even be useful: physicality in warfare might be likened to the single power variables of linear equations—simple and easily

understood; intellection may then be likened to the higher power variables of non-linear equations—more complex and virtually unlimited in power.

While this understanding of linear and non-linear warfare operations is almost wholly based in analogy with mathematics, it will be sufficient to understand the distinctions in operational concepts between Greece and China. My analysis of Greek and Chinese operational concepts demonstrates that the Greek states developed only 'linear' operational concepts while the Chinese states developed sophisticated operational concepts involving both linear and non-linear aspects, balanced appropriately. This makes perfect sense with regards to socio-political constraints. The Greek states were heavily constrained and had no opportunity to transcend what was simple and ultimately physical. The Chinese did have such opportunity. They used both linear and non-linear operational concepts—not just non-linear—in different combinations and balances depending on the situation. The balance of the linear and non-linear was essential to Chinese operational concepts. This important point will be expounded upon during the comparison to follow.

In examining the roles that linear and non-linear operational concepts played in Greek and Chinese warfare, it is instructive to distinguish between two factors involved in any operation: (1) the mechanism of approach, or the attack, and (2) the mechanism of kill, or the way in which the target is attacked. This distinction provides the two comparative points upon which I will base my comparison of Greek and Chinese linear and non-linear operational concepts.

1. MECHANISM OF APPROACH

a. Greece—The Phalanx Charge

It makes sense to consider Greek concepts about 'approach mechanisms' first, since they were linear and simple. One of the most obvious and compelling questions about the "great age of hoplite warfare" is 'why did warfare concepts and practices remain so stagnant for over 200 years?' Indeed, from the eighth to the fifth centuries, hoplite warfare was based on simplistic linear concepts. The way warring armies would approach each other during the initial attack perhaps best exemplifies this linearity. In chapter four I discussed various elements that played roles in the formation of Greek armies on the battlefield, the initial call of the battle, the charge, and the clash of men and armor. To review, the processes were quite simple. In general, phalanx armies would meet at the designated battlefield, each hoplite providing his own equipment and provisions. The soldiers would form up into the phalanx formation according to predetermined patterns that everyone understood (they formed into files according to *demes*). The general, no more than a hoplite himself, would give a motivational speech and, at the appropriate time, would call the charge.

There was little deviation in the way the charge—the mechanism of approach—was performed across different city-state armies and across the 200-plus year period of hoplite warfare. Armies would always meet on level ground so that no one army had a gravitational advantage over the other. While it is not clear from the literature exactly how fast soldiers charged or for what distance, the generals had to be careful to ensure that the charge was not so fast as to cause dissolution of the tight phalanx structure. They also had to keep in mind that running into battle with seventy

pounds of armor was exhausting and would deplete the army's energy, perhaps making them inefficient in the all-important *othismos aspidon* ("push of the shields"). Thus, charge distances had to be kept short, probably under 300 yards.

Hanson provides an interesting account of the traditional Greek battle charge, including a personalized viewpoint of what it must have been like to be involved in the mass charge at the enemy. In doing so, he lights upon interesting questions like "why [did] one side...not merely stay put, kneel down, cover with the shield, and extend the spear, anchoring its butt in the ground" (Western 136)? This certainly would have been any easy maneuver, and one that promised victory, at least at the initial crash. It is doubtful that a charging phalanx would fare well upon running headlong into a wall of shields, spears, and armor. There are several possible explanations, all related to the notion that the Greeks were forced to wage war in the simplest and most efficient way possible—their options were severely limited. Even the simplest of maneuvers, like digging in and waiting, and forming a wall of spears and shields, would have required expert timing and command and control elements that were perhaps not available. It may have required training, which was also not a possibility. It is reasonable to conclude that the famous phalanx charge was subject to the same path dependence that other aspects of phalanx warfare, discussed in chapter four, endured. Charging directly at the enemy must have been obvious to all hoplite participants. They expected it. It required little command and control, little battlefield communication, and every hoplite knew how to run! It was perhaps the simplest, most efficient means of approach.

Hanson suggests another reason for the continued existence of the phalanx charge. He suggests that other aspects of hoplite warfare—particularly the pre-battle

yelling, the drinking, and the motivational speech—were "more conducive to attack than defense" (Western 139). These activities were designed to stimulate hoplite courage and energy, and to allay fear. They were intended to rouse "the hoplite to advance, rather than calming him in an effort to keep steady, stay put, and wait for the enemy's charge" (Western 139). This makes sense. In chapter four I noted that certain elements of phalanx warfare, the *othismos* in particular, served psychological as well as tactical purposes. The "push of the shields" served to make the hoplites feel as if they were making forward progress, and thus faring well in battle. Moving forward, advancing, seems to be more psychologically appealing than waiting for an attack—especially from the individual soldiers' perspectives. In Greece, it was the individual soldiers who mattered. Their battle paradigm was one which depended on advance and attack, if for no other reason than for the feeling of success that moving forward would provide. Thus, direct attack, the charge, became the dominant paradigm, the operational concept shared by all that made the most sense. Hanson says it nicely when he suggests that:

> the first warnings of doom were not necessarily steps backward but, rather, the lack of any progress *forward*, which would give rise to the sinking apprehension that an inevitable, irresistible push backward was on its way. For Greek infantry to adopt that posture in advance was, in a strange way, to acknowledge that battle was already half lost, that the troops had already given up the initiative. (Western 139)

There are two points to be made from this discussion. First, the 'concept of operations' responsible for sustaining the phalanx charge as the main approach mechanism was not conceived only in the minds of the generalship—it was the common paradigm. Charging at the enemy directly was the simplest and most efficient means of approach because each soldier understood both the virtue and the mechanics of the

charge. It was the only concept that made sense, and it did so universally. Second, the concept of charging directly at the enemy is robustly "linear" according to my definition of the term given above. The phalanx charge meets both the 'directed action' requirement of linearity, as well as the 'simplicity' requirement. It is, perhaps, the quintessential example of linear attack.

b. China—Orthodox and Unorthodox Approach Concepts

I mentioned earlier that the key to Chinese 'concepts of operations' involves a balance between linear and non-linear action concepts. This notion of balance is directly related to Chinese philosophy, especially Taoist principles, which seek to understand and harness the power of universal balance. The relationship between operational concepts and philosophy should not be surprising. War is, after all, first and foremost, an intellectual event—only after concepts about war have been developed does it map itself onto the physical realms.

Chinese concepts of approaching the enemy are best encapsulated by the terms "orthodox" and "unorthodox." These terms are found throughout Chinese strategic and philosophical literature, originating with Sun-Tzu, and expounded upon by Sun Pin. Roughly, the terms are analogous to my definitions of 'linear' and 'non-linear' respectively. In his introduction to his translation of Sun-Tzu's *Art of War*, Sawyer provides a brief definition of the terms:

> "orthodox" tactics include employing troops in normal, conventional, "by the book," expected ways, such as massive frontal assaults, while stressing order and deliberate movement. "Unorthodox" tactics are primarily realized through employing forces, especially flexible ones, in imaginative, unconventional, and unexpected ways. Therefore, instead of direct...attacks, unorthodox tactics would mount circular or flanking

> thrusts; instead of frontal assaults, they would follow indirect routes to stage sudden, behind-the-lines forays. (Complete 30)

The definition is a good one, and it is made crisper when he proceeds to qualify it by suggesting that the definition depends upon the *expectation* of the enemy. Doing what the enemy expects would necessarily be orthodox. Only actions that are unexpected can be truly unorthodox. Thus, as Sawyer notes, the definition can become quite complex, as the "orthodox may be used in unorthodox ways" and vice versa. Yet, we need not make the dichotomy too complex. It is sufficient for our purposes to suggest that unorthodox action is that which is both *imaginative* and *unexpected* (these terms are both used in the above quote).

If we look at unorthodox action in this way, as being both imaginative and unexpected, it means that the true definition of unorthodox action depends equally on concepts in the minds of the leaders of the army in question, and concepts in the minds of their enemy. 'Imaginative action' implies that the leaders must be creative in designing maneuvers against the enemy. For an action to be 'unexpected,' the leaders must know what the enemy expects. This is naturally quite complex, and usually results in complex, crafty maneuvers. Thus, the complexity of unorthodox action, and the spatial non-linearity usually inherent in 'complex, crafty maneuvers' make 'unorthodox action' necessarily non-linear. Likewise, it is easy to see how unimaginative, expected actions are naturally expressed by linearity. The direct frontal charge is simple and wholly unimaginative. It is also, under almost every circumstance, expected, since it can usually be readily anticipated by the enemy well before its inception.

Now that the Chinese analogues of 'linear' and 'non-linear' action are understood, how were they used? The dominant concept of approach relating to orthodox and unorthodox measures is encapsulated in Sun-Tzu's dictum: "in battle one engages with the orthodox and gains victory through the unorthodox" (Sun-Tzu, Sawyer 62). Sun-Tzu's treatment of the terms is indeed oracular, but perhaps appropriately so. He goes on to suggest a reason why both orthodox and unorthodox must be employed together, in a balanced system. "The notes do not exceed five," he says, "but the changes of the five notes can never be fully heard" (Sun-Tzu, Sawyer 62). Likewise, "strategic configurations do not exceed the unorthodox and orthodox, but the changes of the unorthodox and orthodox can never be completely exhausted" (Sun-Tzu, Sawyer 62). The point that Sun Tzu makes is multi-faceted. On a strategic level, he suggests that one of the two elements of orthodox or unorthodox employed alone could only produce limited effects. But, when used together, the combinatorial effects are limitless. The strategic advantage is obvious—if I have more strategic options than my opponent, I can gain strategic advantage over him. For Sun-Tzu, this "strategic configuration of power," the act of designing an appropriate balance of unorthodox and orthodox behavior, is the key to victory. It is even more important that numerical superiority: "one who excels at warfare seeks victory through the strategic configuration of power, not from reliance on men" (Sun-Tzu, Sawyer 63). At a higher philosophical level, Sun Tzu makes an appeal to the Taoist philosophies of his time, which championed balance and harmony in all human and natural activity.

But, how does it work? How should this fuzzy concept actually be implemented? Sun Pin helps to expound upon and clarify his predecessor's concepts. In

Sun Pin we find that "engaging with the orthodox and gaining victory with the unorthodox" is a basic tenet of psychological warfare. Victory can only be gained by attacking the enemy where he does not expect to be attacked. To play upon the enemy's expectations, his cognitive biases, an army must make the enemy think that it will attack one way, and then go and attack in a different, unexpected way. Thus, orthodox action is a *ruse de guerre*, a strategic psyop used to draw the enemy's attention and expectations away from the unorthodox attack, the main means of achieving victory. The two must work in concert with each other. If only unorthodox, that is, non-linear, tactics are used, they will eventually be anticipated and expected. Thus, even though the tactics remain spatially non-linear (thus, involving something other than direct frontal attack), they will no longer meet the criteria for robust non-linearity precisely because they are expected. Nor can they any longer be seen as imaginative. Thus, they become orthodox! The orthodox is needed to masque that which is unorthodox. Without this masque, that which is unorthodox ceases to be so, and is, in turn, transformed into orthodoxy. Thus, "victory without use of both orthodox and unorthodox methods is a lucky win in what amounts to a brawl" (Sun-Tzu, Cleary 94).

Historical examples show that these concepts have actually been successfully implemented during actual battles. In chapter four I related a brief account of the battle of Ch'eng-p'u (632 B.C.) found in the Tso-chuan and other sources (see chapter IV.B.2.d of this essay). The account I gave was intended to demonstrate certain points about Chinese force structure, but serves equally well to highlight the balanced use of unorthodox and orthodox tactics. The battle pitted the Qin and Ch'u armies against each other in a rather conventional manner—face to face in formation—across a

featureless North China plain. As noted in Chapter four, the Qin army advanced first with both left and right armies. This approach was wholly linear and orthodox—it was directed straight at the opposing Ch'u army. The Qin left army, continuing the orthodox behavior, smashed directly into the Ch'u right army in an attack that was "urgent and impetuous" (Kierman, 51). While this wholly linear attack and engagement was happening, the Qin right army continued to advance in a likewise linear and orthodox manner directly at the Ch'u left wing. Suddenly, after reaching bowshot range, the advancing Qin right army suddenly reversed and feigned flight. Qin chariots dragging pre-positioned tree branches swept the area immediately in front of the supposedly fleeing Qin army, masking their feigned flight with dust and debris. The Ch'u left, expecting orthodox behavior from their Qin enemy—and for good reason, since Qin had delivered only orthodox behavior up to this point—took the bait and pursued. At the moment when the pursuing Ch'u army's flank was opened, a faction from the Qin center army smashed it and held them while, in a spectacular feat of unorthodoxy, the supposedly fleeing Qin right army circled around behind the pursuing Ch'u left and routed them. This is a superb example of the necessity of both orthodox and unorthodox, linear and non-linear approach mechanisms, united in a strategic balance for ultimate victory. If the Qin left had not used linear mechanisms to combat the Ch'u right army at the outset of the battle, Ch'u might have expected something different, something unorthodox from the Qin right army. Instead, the Qin force functioned as a system of balanced orthodox and unorthodox approach to play upon the cognitive biases of the Ch'u and to ultimately lure them into the Qin trap where they met their defeat. If the Qin and Ch'u armies had both used linear, orthodox mechanisms, there is no reason to believe

the battle would have been decisive. Engage with the orthodox, gain victory with the unorthodox!

2. MECHANISM OF KILL

a. Greece—Overwhelming Force Directed at the Center of Mass

Following the approach comes the kill, at least in theory anyway. The Greek case involving concepts about how to kill the desired target (as well as the target chosen to be killed) is expectedly simple and linear. During the great age of hoplite warfare opposing phalanxes were usually very close to identical—perhaps not always in size, but in form. The goal became to break the enemy's tightly formed phalanx formation via the same tightly formed phalanx formation. By running at each other and colliding, opposing phalanxes hoped to gain the initial advantage, presumably by being the stronger, faster, more concentrated force. Simple physics suggests that the phalanx with greater momentum and cohesion would gain the initial advantage at the collision and during the brief *othismos aspidon* sequence immediately following the collision. Thus, the following concept must have appeared quite a simple matter to the hoplites and generals alike: 'the key to success in phalanx warfare is to have greater cohesion and momentum (literally meaning phalanx mass multiplied by its velocity) at the collision and during the *othismos*, thereby breaking the enemy's phalanx via directed force at the enemy's center of mass!'

Perhaps the concept is not all that simple. There are, after all, three variables in the phalanx collision equation: cohesion, mass, and velocity. The three are interrelated in at least the following ways. Phalanx mass is useless if that mass is not packed tightly together—all the elements of the phalanx (i.e. the hoplites) must be as one

solid unit to meet the cohesion requirement. Yet, cohesion seems to be inversely proportional with velocity—as the phalanx increases its running speed, it must become increasingly difficult to pack tightly next together. There is a natural tendency for a charging phalanx to lose cohesion. Thus, there was some strategy involved in phalanx collision warfare. The hoplite-general, calling the charge, had to understand the physical principles of the situation and find an appropriate balance between cohesion and velocity in order to maximize collision effectiveness, and to insure that both cohesion and momentum could be effectively transferred to the pushing sequence following collision. Moreover, this had to be accomplished with untrained troops.

Perhaps the reason that phalanx warfare did not evolve beyond the simple linear collision is that collision warfare was not overwhelmingly simple—there *was* a strategic game to played. Mastering the game of collision warfare was, at some level, strategically challenging. It seems reasonable that generals and hoplites alike understood that the way to win was to master the collision game, and not to change the rules of the game altogether. As long as phalanx warfare was strategically challenging, it was less likely to undergo major changes in form, especially in light of all the other socio-political constraints on the situation. Essentially, concepts of phalanx operations, especially relating to the collision, remained stagnant due to both socio-political reasons already discussed, and conceptual path dependence, which prevented major warfare innovation while the current form of warfare was still strategically challenging.

The collision was certainly the most important part of phalanx warfare. Battles were usually decided during the collision sequence. The close-in individual fighting that occurred after collision usually served to clinch victory for the army that had

gained relative superiority at the collision. Following the collision, the tight phalanx structure would eventually break (after a good deal of pushing—*othismos*—occurred) and individual hoplites would engage enemy soldiers one-on-one with shields, spears, swords, fists, and whatever else they could utilize. There was no structure to this phase of battle as there was with the almost formalized collision and *othismos aspidon* ("push of the shields") sequence. The goal of this phase of battle, readily understood by all hoplites, was to eliminate as many individual enemy soldiers as possible via brute force. Thus, while it is difficult to define this phase of battle as purely "linear," it was most certainly simple, lacking in any formalized tactics or strategy, and dominated by physicality.

b. China—Concepts of Fullness and Emptiness

Greek kill mechanisms were simple specifically because the form of the target, the enemy phalanx, was always constant and unchanging. Chinese kill mechanisms were much more complex because the disposition of the enemy always played a major role in determining how that enemy should be targeted. This relational aspect, not present in Greek warfare, greatly complicated the strategic situation, placing the onus on strategists to out-think their opponents rather than merely overwhelming them with direct force. Direct force was rarely adequate for achieving victory, since the goal became to understand the disposition of the enemy and be able to exploit it while concealing your true disposition from the enemy. This goal, when reduced to its lowest terms, is really a relatively simple optimization problem. If I am a strategist developing kill mechanisms based on these relational concepts, I want to maximize my ability to kill the enemy based on his disposition, and minimize the enemy's ability to kill me based on

my disposition. The most efficient and effective way for me to do this seems to be to exploit his weaknesses and conceal mine.

This strategic concept of exploiting the enemy's weaknesses given his particular disposition while concealing local weaknesses from the enemy became the essence of Chinese strategic theory regarding kill mechanisms. Many of the great theorists, especially Sun-Tzu and Sun Pin, refer to this concept via the terms 'fullness' and 'emptiness.' This concept of "fullness and emptiness," again very philosophical—even Taoist—in nature, can be expressed in the following way. That which is "full" is strong, solid, and visible. That which is "empty" is formless, vacuous, and unseen. Sun-Tzu encapsulates the essence of the strategic relationship between the two in his simple expression, "militarists avoid the full and strike at the empty, so they first have to recognize emptiness and fullness in others and themselves" (Sun-Tzu, Cleary 100). This two-part expression holds a great deal of meaning. The first part of the expression—"avoid the full and strike at the empty"—demonstrates the relational aspect of Chinese warfare. It is the equivalent to suggesting that the militarist strike at the enemy's weak point, or before the enemy has formed into a strong opposing force (i.e. when the enemy is unprepared). The second part of the expression—about recognizing emptiness and fullness in others and themselves—suggests not only the obvious, that in order to attack the empty the militarist must first recognize emptiness in the enemy, but also the tacit reliance on deception as a staple of relational warfare. When the militarist recognizes emptiness and fullness in himself, he can and should make what is empty and weak appear to the enemy to be full and strong.

Sun Tzu suggests "warfare is the Tao of deception" (Sun-Tzu, Sawyer 41). It makes sense to think of relational warfare as wholly reliant upon deception. Strategic advantage in relational warfare—the warfare of emptiness and fullness—comes from being able to exploit the enemy's weaknesses while preventing the enemy from exploiting your weaknesses. This is best done by deceiving the enemy into thinking that what is weak is actually strong, what is full, empty (and perhaps vice versa in order to draw an attack). Thus, Sun Tzu suggests that in order to control the enemy, in order to be the "director of the opponent's fate, one must "be extremely subtle even to the point of formlessness" (Sun-Tzu, Cleary 104). It is important to realize that "formlessness" used here is not equivalent to "empty" or "weak." Sun Tzu's use of the term "formlessness" implies deception. Thus, what is truly strong is that which cannot be seen by the enemy, and is therefore "formless" in appearance.

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VI. CONCLUSION

Sun-Tzu's simple opening assumption to his Art of War, that "military action is important to the nation" (Sun-Tzu, Cleary 41), is perhaps a more powerful sentiment than the words seem to express. War, military action, is a matter of life and death for a state—it is the "path of survival and destruction" (Sun-Tzu, Cleary 41). Thus, if a state is to survive, warfare must be systematically examined. This has never been more true than today. What can be learned, for today, from this classical warfare analysis? Perhaps that modern-day warfare is directly linked to its classical roots—perhaps more than we realize. Path dependence not only affected the Greeks, and the Chinese to a lesser extent, in their respective isolated time and place. The effects of path dependence are additive—what affected the Greeks and Chinese, and prevented them from taking certain measures while focusing on others, necessarily continues to haunt the descendents of Greek and Chinese warfare. Vestiges of the classical systems of warfare exist in modern-day "Western" and "Eastern" ways of war.

In specifying the differences (and similarities) between classical Greek and Chinese warfare, we can hope to gain some understanding of disparities in different modern-day warfare systems—the heirs of the classical traditions. Methodologically, such a study may aid in demonstrating how disparities in warfare systems should generally be thought about. The study demonstrates how to systematically analyze "warfare character" on a large or small scale. From a philosophical perspective, this study is reminiscent of a Neitzschean *Genealogy*, where a robust qualitative

understanding of present situations is wholly dependent on a rigorous understanding of the ancestry of the situation.

Regardless of the many possible functional uses of this study, some of the discoveries made here are deeply interesting by themselves. First, Gordon McCormick's model for understanding differences in warfare character between states is simple and profound. It systematically eliminates the tendency to lump "warfare character" into the roux of *culture*. It also adequately, and simply, explains the differences between Greek and Chinese warfare.

Other discoveries of interest include the purity and unintended genius of the phalanx form of warfare. The way that all of the elements of the phalanx system fit perfectly together—the built-in command and control structures, the simplicity of its organization, the multi-purpose weapons employed—make it unique and worthy of our interest.

Perhaps the most intriguing aspect of classical Chinese warfare is the many treatises on strategy that sprung from that era, and have continued to dominate the strategic literature to date. Sun-Tzu's treatise on warfare, and the surrounding literature, are arguably the finest works of strategic thought available today. The fact that they all arose from the same place and time in history adds to the intrigue. Encapsulated in those simple writings are some of the most profound notions about strategy and warfare ever developed.

Thus, the real interest in this comparison between classical Greek and Chinese warfare lies in the idea that, despite their vast differences, these two foundational warfare

systems were spectacular. Both, in their own way, were pure, unique, and ultimately, mysterious.

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